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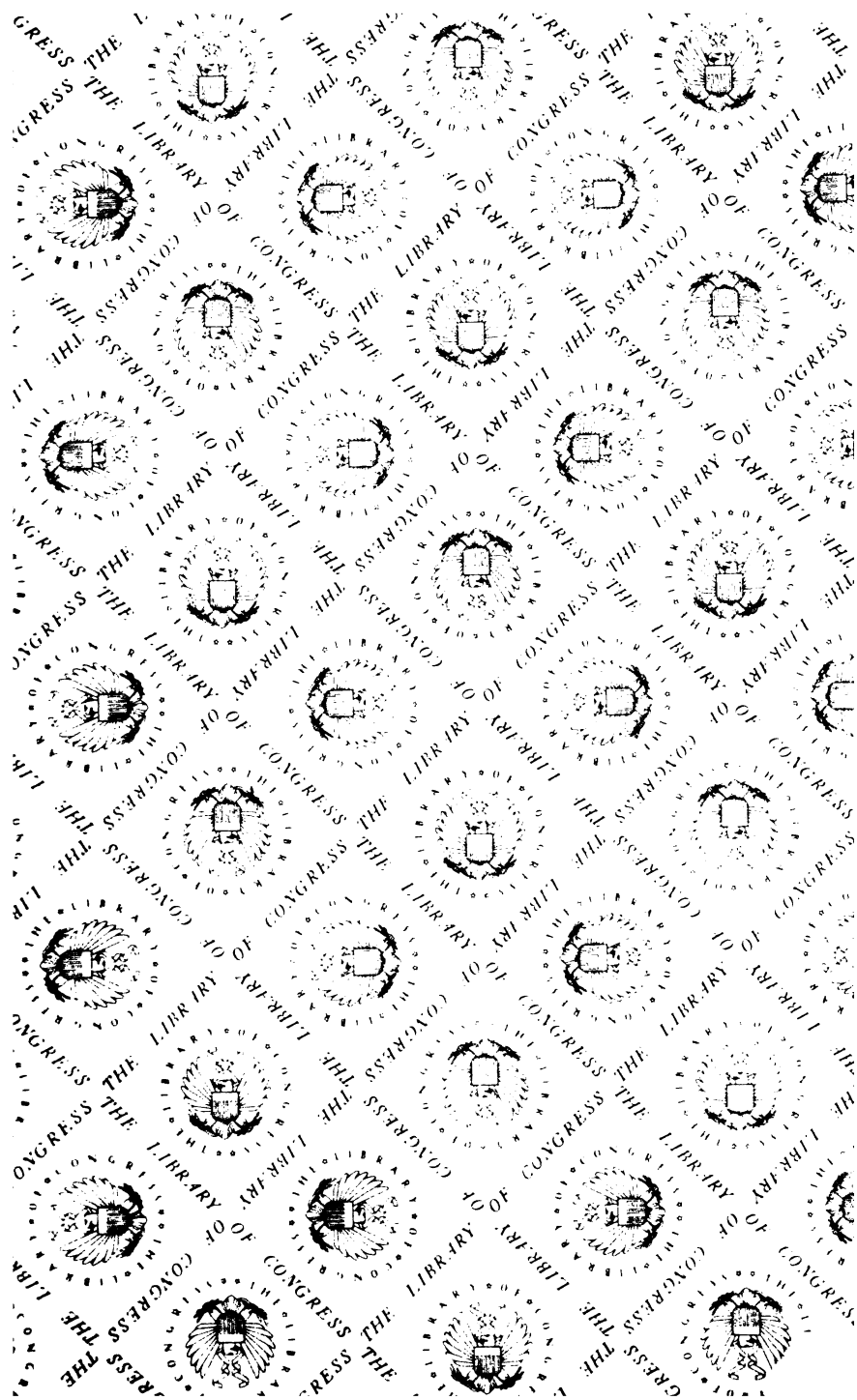
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JOURNAL
OF THE
EAST AND WEST AND SOUTHERN
COUNTIES SOCIETY.

FOURTH SERIES.

VOL. VII.

1896-97.

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**WORK AND LEARN.**  
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1897.

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"Before you attempt to forward agricultural improvement must begin by finding out the 'wounds of what is called nature, or the 'cancer of the country.' It sometimes happens that if wounds are only noticed, and then you may dismiss them flimsily; but often it turns out: every-day practice rests on a solid foundation of these; and then if you make an oversight on a particular, they will be sure to hurt you.

"The course for the agricultural improver is, to take one step at a time, to gain a clear and true state by experience, not to try to go too fast, and to trust to the work of time.

"If practice which sets up to do without theory is contemptible, theory without practice 'coldly and perfectly useless.'—From the Rural Economy of England, Scotland, and Ireland by LAWRENCE L. LAFRANCE.

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JOURNAL
OF THE
BATH AND WEST AND SOUTHERN COUNTIES
SOCIETY.

Original Articles.

I.—*Store Stock.* By CLARE SEWELL READ.

GRAZIERs, especially the winter graziers of East Anglia, have been soundly rated of late, both in the London and Provincial Press, for not breeding and rearing more cattle. It would be as reasonable to lecture the Irish and Welsh farmers for not making more beef. Supposing that the Norfolk farmer could do more airying in the winter, what should he do upon an arable farm with his cows in the summer, and how should he keep his young stock in his large open fields without water or shelter, or cattle proof fences, and sometimes no fences at all, during the parching days of July and August?

When the grazier complains that lean cattle are so dear when compared with the price of beef, that they leave him no profit on his grass and roots, and when he further asserts that the store stock of the country are retrograding rather than progressing, he is told that it is his own shortcomings which prevent him from rearing his own cattle. But abuse is no argument, or will it alter facts. Even last autumn, with its terrible dearth of roots and hay, prime stores have been sold as high as 34s. per wt. live weight, and on the same day many fat oxen have not made more than 30s. per cwt. in London, and by the time rail, killing, and market charges are deducted, that 30s. is reduced to 28s. per cwt.

It is all very well to tell farmers to change their system of agriculture, but even if it were practicable or desirable, that cannot be done all at once. We were told in the Eastern counties to leave off growing wheat if it did not pay. We have done so to a great extent, and have cause to regret that many of us have attended to this advice, as wheat was

certainly the best paying cereal crop last year. While admitting that many farm systems require to be modified to altered conditions which now prevail, there are the two factors of soil and climate which will always influence agriculture of a district and compel it to retain most of its features, even under the most trying and distressing disadvantages. For instance, the 4-course rotation of cropping has been modified in Norfolk, and may still with advantage be further modified by keeping the grass seeds down more than one year and upon light land considerably longer; but this development of temporary pasturage points to an increase of our flocks, rather than our herds. Under no possible circumstances can Norfolk ever become a pastoral or dairy county. Corn growing upon the better soils must remain the chief feature of its agriculture and as much of the land towards the east is not adapted for folding sheep on turnips, a large portion of the root crop must be devoted to winter cattle-grazing. Hence, as more bullocks must be fed than can be reared in the district, Norfolk will still import annually many store cattle.

On the other hand, there are some districts of the United Kingdom which are singularly adapted for breeding and rearing young stock. Ireland affords the best illustration; here they fatten many cattle during the summer, but they can only fatten a few bullocks in the winter. It seems quite natural that as the Irish breeder wants to dispose of his lean stock in the autumn, while the arable grazier wants them to consume his roots, every facility should be afforded for the seller and the buyer to complete a bargain which should be profitable to both parties. As we may be quite certain that no amount of argument or advice will make the Irish farmer attempt winter grazing, or the average Norfolk farmer keep growing cattle upon his arable land the summer.

The same remarks will apply in a modified extent to other parts of the Kingdom. Many counties of Wales, and of the West of England, are more adapted for rearing than grazing cattle, and unless there is a large admixture of arable with pasture land, some of the surplus store stock must be prepared to be winter-grazed under more favourable conditions than those which exist at home.

The following extract from an article on this subject in *Mr. Hedger Wallace*, in a recent number of the '*Pall Mall Gazette*,' supports and confirms the views here expressed:—

"Our leading authorities are now advising farmers to away with shifting stocks of feeding animals, and make their holdings self-sustaining in the matter of cattle, as quickly as they possibly can, but the provision is laid down that the

able to produce a class of cattle such as cannot be had at an equal cost in any other country in the world. Meat can be brought to our markets from all ends of the land and there are countries which at present are importing nothing from our best stock that will in the near future be exported and are certain to fill our markets with beef of a higher grade and low price. It is acknowledged that the class of meat produced in this country excels at present that can be obtained from abroad, but unfortunately the portion that can be classed as of first quality certainly falls short of one-half the supply."

The difficult task our graziers have before them is put forth with truthful force by the same writer, when he

states that our farmers are asked to do is to produce an animal which cannot be produced elsewhere at an equal cost, and the portion from this animal must be the best and the cheapest in the market."

The recent exclusion of Canadian stores has been a serious loss to the East Anglian and Scotch grazier. These cattle were generally strong, healthy, and well-bred. They were a yearling or a most store stock, and were 1*l.* cheaper and 1*l.* better than the average Irish steer. The Norfolk Deputation which met upon Mr. Long last summer, put forward, to my knowledge, a strong case for the exemption of Canadian stores from duty at the ports; but the Right Honourable gentleman, so well backed up by the vast majority of the agricultural interest, that he naturally stuck to his Bill as he presented it to the House, and passed it triumphantly through all the stages. Curiously enough the chief opposition in Parliament arose from a total misconception of the probable effects of the measure. It was contended that by excluding these cattle the price of meat would be raised. Now it is a certainty that every lean bullock excluded by the Bill will assuredly come to this country in the shape of live beef. Mr. Long stated, at the dinner of the Farmers' Club in 1896 the increase of Canadian fat cattle had nearly 3,000 head, and at our last Christmas markets—despite the high cost of winter provender—the value of British beef was 1*s.* 6*d.* per lb. less than in the previous year. These store cattle are being fattened in Canada instead of in England, which may prove of some benefit to the consumer of beef in this country, but will certainly entail a loss upon the grazier, for he must pay more for his lean stock, with the result of selling his fat bullocks at a lower price by reason of increased importation of Canadian beef.

Now that the risk of importing foreign contagious diseases is reduced to a minimum, the cattle breeders of the United Kingdom ought to bestir themselves not only to produce more stock, but to breed better animals. The use of pedigree bulls should become more general. Since the great development of the milk-trade in England, less care has been taken in the selection of sires. A cheap yearling bull, that will serve the herd and grow into money, finds most favour with the dairyman. The calves are disposed of when a few days old, and very few are reared on the farm. Even where the pastoral farmer does wean some of his heifer calves to replenish his dairy, the use of pedigree bulls is not so common as it was.

The fear so constantly expressed, that the introduction of pedigree stock into a herd of dairy cows will injure rather than improve its milking qualities, is, I think, unhappily too true. Yet there are strains of milking Shorthorns of the purest pedigree that will hold their own against the yield of any ordinary dairy cows. The Shorthorns, bred by the Messrs. Stratton, and by the late Mr. Hobbs, and now by his son at Maisey Hampton, are among the numerous instances which might be cited to prove this fact; and there are many celebrated breeders of Red-polled and Devon cattle, who carefully study the production of milk as well as flesh. But bulls of this class are difficult to find, and expensive when found. It is far different with sheep. A fairly well-bred ram can be obtained in almost any market in England at a price within the means of even small flock masters. Hence we find the sheep stock of the country yearly improving, but no such progress can be noted in the general run of our cattle.

Wherever a pedigree bull is kept he leaves his mark upon the stock of the district. And the more mongrel and nondescript the cows, the more distinct is the impress of the well-bred sire upon his calves. This is most remarkable with the Hereford bull. Whatever may be the cow with which he is mated, either in this country, in America, or the Colonies, his white face is to be seen in the progeny, and these half-bred Herefords are the very best stores the grazier can purchase. It is also more easy and certainly cheaper to breed useful cross-bred cattle, than it is to obtain the prime meat and the perfection of feeding qualities from both pure-bred animals. But then you must have either male or female of the purest blood, or breeding from cross-bred animals will soon end in disappointment. The cross between the Shorthorn and the polled Scot produces those splendid blue-grey cattle of the North, which are so highly prized by graziers. They often have the early maturity and the size of the Shorthorn, and retain as well the

dark coat, the prime flesh, and hardy constitution of the Scotch. In my small way I have tried the crosses of Red-polled Norfolk and Shorthorn cow; Shorthorn bull and Scotch heifer; and Hereford bull and Shorthorn dam, and the whole have been singularly successful at fat stock shows. I think for early maturity and size the Hereford cross is the best, though the other crosses produced a neater animal and a better quality of meat. But I repeat, that I do not believe the same success would have followed unless the three bulls had been animals with a good long pedigree.

Most bullocks, when they are four years old, will lay on flesh with liberal feeding. But what is wanted in these days is a steer that will come to fair perfection and furnish a good carcass of beef at two years old. Most of our sheep are now killed under twelve months old, and a vast number of hoggets that were lambed in March are slaughtered as mutton before Christmas; indeed, it is difficult to know when lamb ends and mutton begins. This points to the early maturity of our sheep, and if "baby beef" is to be produced, a better class of cattle must be more universally used. This can best be accomplished by mating the "all-round, general-purpose cow"—who will fill the milk pail, rear a healthy calf, and when the days of maternity are over, furnish a stall of useful butcher's meat—with a good pedigree bull from a herd where milk has not been sacrificed to fat.

Some high authorities contend that the evil of over feeding breeding stock does not end with reducing the flow of milk, and damaging the fecundity of the animal, but also permanently injures the texture of the meat and softens the constitution of the animal by the continual reduction of the amount of bone.

They go on to condemn our Christmas shows. This is going a bit too far. The huge, patchy, over-fed animals of fifty years ago are now seldom seen, and if they are exhibited, they never figure in the prize list. No doubt all the commended animals at our Smithfield Shows are much fatter than ordinary profitable meat should be; but these animals are practical demonstrations of the early maturity and wonderful development of weight of meat of the different breeds. The block stever, however, has exhibited to the public what butchers and graziers know only too well, that the over feeding of breeding animals for many generations has so encouraged the production of fat that it has completely mastered the proper development of lean meat. The overwhelming proportion of fat to lean in the flesh

the purest Shorthorns and Herefords has made butchers wary of buying those high-bred animals, and the public still more cautious in purchasing such over-fat, wasteful beef. This is more noticeable still in the case of mutton, where the difference

in value between the large white-face breeds and the small downs and black-face sheep increases every year, for the latter not only cut smaller joints, but with much more lean in proportion to fat.

Before leaving the subject of overfeeding, the following weighty remarks, made by Mr. Fred Street, in his excellent paper on "Sheep-breeding," read before the Farmers' Club during the last Smithfield week, are well worth recording here:—

"Mention has been made of the good effected by the annual exhibition of the Smithfield Club and the Royal Agricultural Society. Of the former nothing but the highest praise can be given, as evinced by the splendid exhibition we have this day witnessed. With reference to the latter, and I may include other shows also, I would ask, Are we on right lines in encouraging the exhibition of shearling and other ewes? At the Royal Show held at Shrewsbury in 1884, I observe 315 ewes were exhibited of one breed alone, and other breeds were fairly represented. We may fairly estimate that at least five times the number—the pick of the flock—were put in training, and, I may say, sacrificed for exhibition purposes. They are useless for breeding purposes the following year, and if kept in the flock—most of them are sold to go abroad, thus depleting this country of the backbone of our breeds, namely good dams—their constitutions are undermined when given ordinary food. Knowing full well as we do the evils of such a course—which is not confined to sheep-breeding alone—why perpetuate it?"

A good illustration of the benefits to be derived from the use of pedigree bulls is furnished by the great improvement in Canadian Stock. Twenty-five years ago they were mostly common ranche cattle, yet during the past few years the stores imported were quite equal to the best class of Irish cattle. This has been brought about by the importation of the best bulls from the mother country. A similar improvement has taken place in the cattle of the Western States of America through the introduction of pure-bred bulls.

It is a curious fact that when Mr. Albert Pell and I visited America in 1879, we saw very few polled stock; now half the bullocks imported into this country from the States are without horns. But they are mostly artificially, not naturally polled, a practice which is widely appreciated in America, and which is lawful in Ireland and Scotland, but is illegal in England. When Irish horned cattle are grazed in small yards they inflict grievous injury upon each other. Irish cattle are naturally wilder than home-bred stock. When fed in pastures, horns may do comparatively little mischief, but even in open fields

do no good. It is when these cattle are confined in close quarters that injuries from horns are more common and most serious. Not only are the sides of the underlings gored and, but during the whole winter one masterful ox will clear shed, devour more cake and meal than is good for him, and give the rest of the yard of their proper share of artificial l. The effect of dishorning these cattle acts like magic; the lies find that their offensive weapons have disappeared, and whole herd will eat like pigs out of one long manger. horning is branded as cruel. No doubt it is a painful operation, but not so painful as castrating horses and spaying pigs; yet the benefit to both animal and owner is no doubt greater than in the latter operation. It is said that we should have polled stock, and that cattle should be dishorned when they are calves. Both these statements may be correct, but there are many horned cattle that are so docile and quiet—to wit, the Herefords—that they seldom quarrel, nor is there the necessity to dishorn any stock for summer grazing. Irish cattle are mostly bought in small lots, and then sorted into big ves. So when an East Anglian grazier buys twenty store cattle they may have been bred on ten different farms; hence the fighting which invariably ensue. The Irish dealers know that a polled steer or heifer will sell on Norwich Hill from 10s. 20s. more than a horned animal. So thousands of Irish locks come over polled; but the operation, instead of being performed during calf-hood, is generally postponed until the animal is two years old. In addition to the misery and loss sustained in the farmers' yards, there are many serious accidents on board ship and in rail transit that might be entirely obviated by the cattle being dishorned.

It is nearly twenty years ago since I made the remark that a British farmer would before long feel the competition of foreign dead meat more keenly than he then did the importation of live animals. At that period the arable farmer had been terribly hit in all his cereal products by the competition of the whole world, which has since been greatly intensified. But the English grazier has now to lament that the small vanishing profits he has made during the past ten years are entirely swept away—not so much by the import of live animals, as by the steady increase of the dead-meat trade. Already the import of dead meat is nearly three times the value of live animals from abroad. Year by year, distant lands are being developed and brought nearer to us, native stock are being improved by re-bred cattle and sheep from this country, and better modes of storage and cheaper transit are being introduced, the competition must increase. It would appear that while

8 MACDONALD on the Selection and Hiring of Cart-Stallions.

the foreigner is for the moment abating his fierce rivalry in grain, he is more vigorously than ever assaulting British agriculture by his increased imports of live and dead meat. ____

II.—*The Selection and Hiring of Cart-Stallions.*

By CHAS. J. B. MACDONALD.

It is extremely important that advantage should be taken of the widespread interest at present manifested in draught-horse breeding to establish the pursuit upon an extended and more systematic basis. The breeding of cart or agricultural horses has been a specially prominent feature in British agriculture for at least a quarter of a century, and it would be idle to deny that a wonderful and steady improvement has been brought about in the quality and character of the heavy horses of our fields and streets during that period.

But while we have already advanced a long way from the somewhat remote and indefinite starting-point, there still lie ahead vast fields to be traversed and reclaimed. We have fairly set out along the road of progression, and the movement continues in the main in the right direction. The rate of advance, however, is not very rapid, nor as yet is the forward march so general and free from interruption as it might be. At certain points and in individual cases great progress has been made, and not a few breeders have succeeded in closely approaching the desired goal, which, however, it is given only to the very few and specially fortunate to attain.

But before the pursuit of horse-breeding can be said to have done all it might do for the industry of farming, a large and important section of the ranks remains to be brought forward into closer touch with the enterprising contingent who forged ahead fifteen or twenty years ago, and have since kept steadily widening the gap between themselves and those who have been less progressive.

By what means this desirable object may best be accomplished is a topic upon which some difference of opinion may be expected, though all are agreed as to the intrinsic importance of the subject, and also that it is fully ripe for discussion.

A QUESTION FOR THE INDIVIDUAL FARMER.

The horse-breeding pursuit is one the destiny of which must rest largely with farmers themselves. Local and indi-

vidual circumstances weigh so heavily in a matter of this kind, that the farmer cannot easily be relieved, even should he so desire, of the responsibility of deciding for himself the precise attitude he should assume towards it. Not only the suitability of the farm as to soil, climate, and situation has to be considered, but the skill and judgment which can be brought to bear by the owner must be taken into the reckoning. The financial question also forces itself into prominence in this as in many another subject. It will be clearly understood, therefore, that the breeding of heavy horses is not a pursuit equally adapted to all circumstances. I do not urge its adoption more than that of any other special pursuit, as a cure for all agricultural ills. Nor could it be recommended as worthy of superseding other subordinate industries which are pursued with a moderate degree of success. Notwithstanding the various obstacles which stand in the way of adopting cart-horse breeding as a special pursuit, however, there are probably but few farmers who could not turn it to useful account. The pursuit, happily, is available to all, and may be followed on any scale, ranging up to the exceptional prominence which frequently characterises the management of studs conducted on strict pedigree principles, where the primary aim is the production of colts and fillies capable of enhancing the qualities of the several registered breeds.

In this short paper I propose to direct my remarks more particularly to the vastly more numerous class of farmers who breed horses merely or mainly for labour purposes. It is presumed that owners of line-bred studs, aiming at a higher than purely commercial market, are imbued with an adequate sense of the importance of the subject under notice, and not only possess but use the means for carrying it into practical effect. Accordingly, I address myself primarily to the farmers who, while not inclined to establish breeding paddocks on pedigree or special lines, are yet in a position to derive benefit from horse-breeding on a minor or less systematic scale.

I am firmly convinced that cart-horse breeding is eminently worthy of the attention of farmers. There is always a convenient and ample market for the best class of draught animals, and the prices usually obtainable for them are highly remunerative. But, if the pursuit is to prove of any appreciable service, there must be no mistake about the imperative necessity of prosecuting the business in a proper and methodical manner. The too prevalent hap-hazard fashion of conducting the affairs of the stable will have to be superseded by a more devoted respect for the underlying principles upon which alone any lasting success can be attained.

THE MARE STOCK.

In passing, it may not be out of place to refer briefly to the proved importance attaching to the calibre of the stock of mares. Experience as well as intelligence teaches that success is rendered appreciably easier of attainment, or the reverse, according to the merit of the mares employed for breeding purposes. Both the ancestral and the individual merits of the mare, but perhaps the former more especially, are deserving of the utmost consideration, and I would strongly urge that, as far as convenience and circumstances will allow, these points should be scrupulously attended to in the formation as well as in the maintenance of the breeding stud, no matter what the object in view may be. Above all, animals known to be the victims of any specially objectionable hereditary disease should not be admitted to, or tolerated in, the breeding paddock.

IMPROVEMENT MUST COME THROUGH THE SIRE.

Although high merit and general soundness in the mares are extremely desirable requisites and endow the owner of such animals with substantial advantages, yet for various good reasons this is not the direction from which the improving element is likely to come. The sacrifice which would be involved in the prompt replacement of the present faulty class of mares by animals of a better type and more distinguished lineage—even if the latter could be procured in sufficient number, which at present is not possible—would amount to prohibitive dimensions. Improvement, I maintain, must be gradually effected from the other side by using only stallions capable of imparting the desired properties to their progeny.

POINTS TO OBSERVE IN SELECTING STALLIONS.

The selection of stallions, therefore, is a matter of foremost importance, whether the farmer keeps one brood mare or twenty, and he cannot afford to overlook it.

In choosing the sire with which he desires to mate his mares, the farmer is confronted with a question of some intricacy. Several points rise into view to claim his notice. He has, primarily, to decide upon the market for which he intends to cater. In the settlement of this point he will be guided chiefly by the class of draught horses most in demand in his locality, and the type his holding is best adapted for rearing. The class and character of the stallions available are also matters which the breeder on a small scale cannot afford to neglect.

One of the first points, perhaps the very first, that the success-

ful horse breeder has to bring home to himself is the absolute necessity for rejecting the mongrel and unsound stallions of all types that travel so plentifully over the country. I know of no point rivalling in importance that which prescribes the use of only such sires as present the indispensable certificates of pedigree and purity, and outwardly conform to the requirements of the hirer.

THE CLASS OF STALLIONS TO EMPLOY.

Fortunately there is no scarcity in the country of sires possessing the proper qualifications—thanks to the enterprise and judgment displayed by owners of line-bred studs. It cannot be denied that certain difficulties are involved in connection with the selection of stallions of the approved type. The animals may have to be brought long distances, and to be hired at considerable expense and risk. But these are only such everyday troubles as are found to be inseparable from any class of business based upon and conducted on well-defined principles, and should surely not dull the energy and pluck of the farmer desirous of turning horse-breeding to useful account.

The stallions that must be employed are to be found only in, or emanating from, the line-bred studs, if the industry is to yield any tangible result to breeders of commercial geldings. And, moreover, although this is unquestionably true whether the Shire, Clydesdale, or Suffolk type is desired, it by no means follows that every sire produced upon pedigree lines is suitable for the object in view. While farmers are under the inevitable necessity of drawing upon the pedigree studs for the blood that is to raise the standard of their geldings, fillies, and ultimately their brood mares, they require at the same time to keep prominently before them the equally potent fact that there is wide scope for selection among pedigree sires. There are many well-bred horses quite unsuited for useful stud service, and on no account should the commercial breeders have this objectionable class foisted upon them. The pedigree is of eminent importance by reason of the prepotency it ensures, and should have due weight attached to it. But it is not everything. The individual qualifications must have their due consideration, regard being paid to the size, conformation, and action of the animal, as well as to his constitutional vigour and freedom from hereditary, infectious, or contagious unsoundness.

UTILITY OF PEDIGREE BLOOD.

There is no way in which pedigree studs can render more capable service to the country in general than in that I have

suggested, viz., by diffusing the effects of their influence, through the agency of their surplus stallions, over the whole land. Through no other channel is the elevating influence of the great centres of pedigree breeding permitted to spread itself more freely or more effectively. The prepotency of the pedigree may flow along the female line with equal power so far as it goes, but in this case its rate of speed is slow, and its scope necessarily restricted. The pace at which the mares can influence the breed as a whole is quite incompatible with the costliness of the process. Through the instrumentality of the stallions the result is infinitely more speedy and less expensive. And for the obvious reason that whereas a mare can produce but one foal in a year, the horse is capable of imparting his inherent qualities to from fifty to eighty foals in a corresponding period. By making use of these sires farmers are enabled, at a comparatively moderate cost, to participate in the fruits of the concentration of thought and skill exercised in the management of the successful line-bred studs.

HIRING STALLIONS.

A strong disposition to consult convenience rather than expediency is, I fear, a charge to which many farmers who attempt horse-breeding lay themselves open. There is no other feasible explanation of their proneness to disregard the better dictates of experience and common sense when arranging for the services of stallions. Hundreds of horses are led through the country during the spring season without having specific engagements beforehand. Their leaders set out on their wandering tour in confidence that the smallness of their fees, the earliness or opportuneness of their arrival upon the scene, or other chance circumstance, will procure for them a remunerative custom. And by all appearances their confidence is not misplaced. If we may judge by the persistent manner in which the chance method is pursued, the conclusion is forced upon us that the practice succeeds handsomely.

The apparently prosperous state of this promiscuous travelling system is scarcely creditable to the enthusiasm and intelligence of the employers of stallions. It unquestionably implies that they are guilty of the offence indicated. Such a condition of things is much to be deplored. Not until this objectionable method is abolished and superseded by some properly organised arrangement will any considerable degree of success be attained.

CONCERTED ACTION INDISPENSABLE.

Concerted action on the part of the farmers is a necessary preliminary to the establishment of a better system of horse-

ng. The breeders of a district will require to combine and together more studiously and unitedly than has been the hitherto. In many parts of England, where cart-horse ing might be followed with a substantial degree of success, absolutely impracticable for a farmer to proceed on the sted lines single handed. Far removed from any pedigree of influence, and situated in a locality which has perhaps r been traversed by a draught stallion of registered lineage, utterly useless for any one breeder, whose aim is to breed rofit, to attempt to procure the horse he desires or ought to oy. The cost would be prohibitory. Presumably it is fair to infer that circumstances of this description account me considerable degree for the liberal extent to which the ed inferior class of sires have been in the past and are still ed.

t where one farmer is practically helpless, properly arranged ination by a number may very easily prevail. One man or a few probably could not advantageously engage the services registered horse, but a district, which contains say sixty or holdings all in occupation, should find the undertaking well n its power. The tenants have merely to form themselves a club or society with a small membership fee and to direct tions from this stronghold. A moderate sum, compatible their capacity, could be granted yearly from the funds of the ty to subsidise a horse of suitable character and calibre, and in addition to a guarantee of a certain number of mares at sonable stipulated fee for each, should place the farmers of ocality in a position to command the services of a really sire of any breed.

A SYSTEM OF PROVED UTILITY.

is system is by no means new. It has been in vogue in orth—on both sides of the Border—for many years, and recently has been steadily gaining favour further south. substantial economic advantages it offers must be evident to The owners of stallions, no less than the users of them, must a position to appreciate the benefits such a well-designed m possesses. By contracting beforehand on fixed lines the rs of stallions reduce their risk of revenue to a minimum. can estimate approximately the income their invested al is to yield them before the animal starts upon his seasons' d, while the method referred to also tends to diminish the ce of loss from bad debts.

eping all these tangible advantages in view, the owners should ble to let their horses on terms more favourable to the

hirers. The almost entire absence of risk is a matter of weighty importance to the possessors of sires which can be spared from strict pedigree stud service, and the givers of the guarantee are legitimately entitled to benefit by the sensible part they play in divesting the business of its speculative element to the utmost extent attainable.

That the adoption of a well-defined system of co-operation would be of immense value to the farmers employing stallions is at once clear. Not only would it place them in a position to secure the services of a first-class fully qualified horse, but they could also by this means hire such a sire on terms very little higher than those payable for the inferior types which abound in most localities. Moreover, the extension of this custom would be the surest means of bringing about the extinction, through the effective process of starvation, of the objectionable class of sires alluded to. This in itself would be a sufficient recommendation of the practice of combination, for I firmly believe that the rate of improvement in the general class of draught horses will make but little advance until the rough, mongrel, unsound stallions that infest the country have been completely swept out of existence.

SHARING THE LOSS.

There is a certain risk inseparable from stock-breeding generally, and which is apt to manifest itself in perhaps a special degree in stud management, that no doubt weighs heavily against the engagement of high-rated stallions. I refer to the liability of the mares to miss service. Under ordinary existing conditions of contract this risk, if I mistake not, has to be borne entirely by the owner of the mare. This I regard as an undue hardship upon that individual, more especially since it is by no means clear that the stallion is wholly exempt from blame. Indeed, it is a recognised fact that stallions vary greatly in their foal-getting capabilities, and probably as often as not the horse is responsible for the fruitless result.

Viewing all the circumstances impartially, I think it will be conceded that there is sufficient evidence of default against the stallions to justify the common application of a rule providing for the division of the loss accruing from such misfortunes. A custom prevalent in some parts seems to meet fairly the claims of the case. The premium or subsidy guaranteed is left unaffected, but when no foal results, half, or some other substantial part of the supplementary service fee, is sacrificed by the owner of the stallion. The even division of the stipulated fee may commend itself to most as a suitable

angement, but, although the disappointed breeder paid but a third of the original sum, he is very heavily taxed, while with that fraction in addition to the retaining fee the owner of the horse has still the better of the bargain.

I recommend all the more readily this system of dividing a loss that results from this cause, because I confidently believe that its universal adoption would ultimately operate to the decided advantage of the breeders and owners of high-class stallions. There can be little doubt but that the general recognition of the arrangement would conduce to the extended employment of the best class of sires, and any scheme that would tend to this end surely deserves the respectful consideration of those having sound pedigree stallions for hire.

EFFECTING THE SELECTION.

The means by which a sire answering the requirements and capabilities of the district could be selected are not very numerous. The onus of choosing the animal and fixing the contract governing his services would, for the sake of expediency and economy, have to be entrusted to a committee or deputation composed of capable judges imbued with a true sense of the requirements of the locality and prepared to act accordingly.

There are no more convenient or suitable opportunities for making the choice of a stallion than those which the spring shows offer. At London, Glasgow, and Woodbridge, collections of stallions, large in point of numbers, and sufficiently ample variety of type and price to suit the specifications of all districts, are presented. Many horses are sent to these important exhibitions not so much with the idea of winning a prize as for the purpose of having them brought under the notice of intending buyers or hirers, and hundreds of good animals may be engaged for the season at these public gatherings upon very reasonable terms.

I advocate, for two main reasons, the acceptance of the opportunities these great shows provide for making the selection of sires. Whether at the large shows mentioned, or at the smaller meetings held in many parts of the country—but the former in particular—the task of those entrusted with the choice of the sire is materially aided by the healthy comparisons and aiding standards of excellence there provided. An animal is more easily gauged at his actual merit at Islington or Glasgow than in the seclusion of his own paddock, and this is more than otherwise a result advantageous to the hirer of stallions some degrees removed from the very highest rank, which is the generality of sires hired for begetting commercial stock.

admittedly are. The opposite probably would be the effect regard to the select and honoured animals which, however, are usually retained for duty in pedigree studs, and do not much concern the average farmer.

Further, the shows are preferable, on the score of economy to a private tour of the studs. Expenses in the execution of this important duty may very easily run up to formidable dimensions, and, as such a contingency should be scrupulously guarded against, the cheaper course, especially as it possesses many other advantages, is the better to adopt.

GOVERNMENT AID.

The suggestion raised some time ago that Government should be invoked to stimulate and encourage cart-horse breeding naturally gave rise to some diverse expressions of opinion. As was only to be expected, the proposal came to nothing, and disappeared from the arena of discussion almost as suddenly as it came into it.

The suggestion, emanating from the influential and respectable source it did, was brought forward in good faith and with an honest endeavour to benefit and foster a useful pursuit capable of extensive development and improvement, but which unfortunately, has made but slow headway outside pedigree circles in the past. The promoters, no doubt, were stirred to action by the evidence, which forcibly confronts the observers, of the widespread indifference with which the subject of this short paper is treated in practice. Being conscious witnesses as they were of the lamentable extent to which badly shaped, cramped horses, with nothing except cheap fees to commend them, were employed by farmers when many more worthy of the important duty were passing the season in comparative idleness, it was no wonder that they should have found themselves impelled to move in the matter.

With the object they had in view there will be deep general sympathy. It is full time the former order of things should be dispensed with. It is not easy, however, to obtain unanimity of opinion regarding the means by which the desired reformation is to be brought about. An appeal to the Government was a convenient as well as a popular method, and successful it might have hastened the realisation of the end in view. In the eyes of the parties more immediately concerned it might also have appeared to possess the advantage of economy.

But the objections to this suggested solution of the difficulty are practically insurmountable, as a careful reflection of

whole circumstances will reveal to the impartial mind. It would admit a principle and establish a precedent of dangerous and troublesome degree, for, in common fairness, its application could not be restricted to cart-horses. Equal assistance could not reasonably be denied to appealing owners of other classes and breeds of live stock. Nor, indeed, could the limits of the system end with live stock, or even stop short at the wide bounds of the entire breeding industry. Once initiated there is no saying where the system might end. In these depressed times, when one branch of farming is as sorely stricken as another, it would almost unavoidably spread from branch to branch until our fine agricultural industry would become divested of its dignity, independence, and stability, and remain a tottering fabric, fluctuating with the moods and motives of changing Governments.

Let us have whatever aid Parliament can afford in other directions. The development and control of the farming industry will be better left to the individual enterprise of practical occupiers.

I am loth to believe that the horse-breeding pursuit is reduced to such straits as to be in need of State aid. Increased enthusiasm, a more adequate realisation of the conditions which conduce to success, and better organisation are what the supporters of the pursuit should aim at establishing, and these and other similar points constitute the only sure foundation upon which a really useful and abiding industry can be built.

III.—*Butter Dairying and Butter Cows: British and Foreign.*

By JOHN FREDERICK HALL.

A REVIVAL of the home industry of butter-making, upon an extended scale, appears to be contingent upon various circumstances, such as the spread of technical education, the growth of a new generation of farmers, and the enterprise of capitalists; but of these contributing causes, the most effective will undoubtedly be the advance of technical education. Upon such a foundation only can capital and energy be safely expended. One branch of this technical knowledge is concerned with the selection of the cow and the development of her milking properties, on lines specially adapted to butter production. It is to this branch that we propose to confine our attention.

PROGRESS SINCE 1876.

Those of us who can look back fifteen or twenty years, and recall the state of dairying, when Mr. Jenkins, of the Royal Agricultural Society, published his masterly series of essays on the foreign industry [1875-1877], when Mr. Allender delivered to the members of the Farmers' Club his stirring address on dairying [1881], and when Mr. Tisdall produced his records of the Holland Park herd [1883], will note a very remarkable and satisfactory advance since then in public knowledge of the subject. In those days a comparison of the milking properties of various breeds had not been attempted, milk records were unknown, the composition of milk was disregarded, the term "butter ratio" had no popular significance—in short, neither in the United Kingdom, nor in her Colonies, nor in foreign countries, was it possible to obtain trustworthy statistics respecting such elementary subjects of inquiry as the milk yield, butter ratio, or live weight of cattle. At the present day these mists of ignorance are in process of dispersion. We have, at any rate, arrived at the point at which we know what quantity of milk an average cow of a particular dairy breed ought to produce in a year; and we know also approximately the quantity of butter-fat which that milk should contain. As yet, however, we are upon the threshold, and must advance much further in the direction both of practice and of research, before we can claim any mastery over the subject.

FURTHER PROGRESS NEEDED.

Our practical men ought to study more closely the question of feeding; they must not only select the proper sort of food, but must exercise strict economy in the utilization of it. The advantage of arable land, not only as providing winter food, but also as supplementing pastures in drougthy seasons, is insufficiently recognised in our dairy districts. Stall-feeding, which is the basis of the vast Scandinavian butter industry, is not practised amongst us, notwithstanding that its apparent suitability to the conditions of the Eastern Counties has been repeatedly pointed out by travellers. The management of stock by the average dairyman leaves much to be desired. Cases of abortion are more frequent than they need be under a more intelligent system of treatment; and the long intervals which are suffered to elapse between calving and pregnancy and which tell so heavily on the later stages of lactation, may frequently be traced to negligence on the part of attendants.

Systematic observation which should throw light on the

Following questions would be valuable, viz.:—what is the average period of lactation in various breeds; the effect of advancement in pregnancy on quantity and on quality of milk; the relative importance of breeding and of feeding for the production of butter-fat; the characteristic difference in the butter-fat of different breeds; the relation as to cost between live weight and butter produce; and the carcase value as an element of profit in the butter dairy? These and similar problems, which are as yet but imperfectly understood, touch more or less directly, the issue of profit in butter-making, and we look to our Colleges and Agricultural Institutions to provide us with the information necessary for their solution.

COMPARATIVE MERITS OF DAIRY COWS.

A comparison between the merits of different breeds, which is based only upon their milk yields and butter ratios, cannot pretend to completeness. Butter may vary in market value 2*d.* per lb. or more, owing to some defect, inherent or accidental, in the nature of the butter-fat, and altogether unconnected with any imperfection due to the processes of the dairy. Or, the cost of producing butter may vary 20 per cent. or more, through differences in the size, age, or breed of the cattle. Again, farmer A may use a separator, whilst farmer B adheres to more primitive methods and appliances. The gain of 5 or of 10 per cent., which is the reward of A's enterprise, should be credited to improvement in the dairy process, and not to improvement in the dairy stock. But, though a comparison on the basis of milk yields and butter ratios is subject to these drawbacks—namely, that it does not tell us how one quality of butter-fat differs from another; nor what is the prime cost of producing butter from herds which differ in age, in size, or in breed; nor how much of an apparent gain in gross produce is equitably due to improved dairy processes—yet it does at least furnish us with approximate statistics of the amount of butter produced per cow in various parts of the world.

MILK YIELDS AND BUTTER RATIOS.

By "milk yield," we mean the average yield of milk per cow per annum. "Butter ratio" represents the average quantity of a given milk required to produce 1 lb. of butter. Ratios may vary from 10 lbs. upwards. The ratio 10 indicates that it takes 10 lbs., or about 1 gallon of milk, to make 1 lb. of butter. Broadly speaking, it is the interest of every dairyman to obtain the largest quantity of butter from the minimum

of milk—*i.e.* to reduce the ratio to the lowest figure practicable. Not only does this reduction imply less expenditure of time in drawing and in separating the milk, make less weight to handle and fewer vessels to keep clean, but also, for every additional ounce of butter obtained, there is a substantial advance in the value of the milk. For instance, if the market price of butter be 1s. per lb., the value of milk per gallon (omitting notice of the skimmed or separated milk) will vary according to its butter ratio, thus:—

Butter ratio 35, or $3\frac{1}{2}$ gallons per lb., less than $3\frac{1}{2}d.$ per gallon.	
„ 30, or 3 „ „ $4d.$ per gallon.	
„ 25, or $2\frac{1}{2}$ „ „ over $4\frac{1}{2}d.$ per gallon.	
„ 20, or 2 „ „ $6d.$ per gallon.	

These figures furnish the key to the importance which we attach to the question of butter ratio, or relative richness of milk.

DENMARK.

In spite of many natural disadvantages—of sandy soil and deficiency of pasture, of long winters with low mean temperature (below 32° Fahr.)—Denmark continues to take the lead amongst butter-exporting countries. During last season she delivered on our shores over 39,000 tons of butter. Formerly she bought large quantities from Russia and from Sweden; but it is asserted that her present exportations are all practically the produce of her own soil. The advance in Danish dairying dates from early in the sixties, but for some years progress was not rapid. Between 1865 and 1876 the average cow yielded about 500 gallons per annum, with a butter ratio of 30: thus the average yield of butter was about 170 lbs. per cow. However, with increased attention to the breeding and efficiency of their herds, the milk production of the cow is understood to have been raised to 550 gallons, whilst, partly owing to the introduction of the Swedish separator (Alpha Laval), the butter ratio has been reduced from 30 to 26. In the case of certain farms the cows are known to yield 600 gallons per annum, and the milk is of such a quality that 24 lbs. will produce 1 lb. of butter. But these are exceptional; the average production can scarcely be estimated at a higher figure than 200 lbs. of butter per cow per annum. The live weight of the favourite Danish cow is between 7 and 8 cwt.

SWEDEN.

H.M. Consul, in his 'Report on Swedish Agriculture, 1893,' remarks: "The climate is so severe and the winters are so long

cattle have to be stall-fed, at any rate during the part of the year; and in many parts of the country, where no pasture, they have to remain tied up in the shed all round, and are thus entirely deprived of exercise." It bore no small credit to the Swedish farmer that he has been in raising his exports of butter to 11,000 tons per annum, placing him third on the list of producers for British exports. In order to encourage dairy farming, the Swedish Government adopted a very practical measure. So long ago as 1853 they appointed two dairy inspectors, each at a salary of £100 per annum, with free railway passes and an allowance for travelling expenses. It was the duty of these inspectors to visit the farms in order to instruct the women in the best processes of milking, and, at the same time, to advise the farmer as to the best management of his cattle, so as to obtain the best results. The plan was found to answer, and the number of inspectors was gradually increased, till in 1885 there were thirty thus employed. The cattle of Sweden are of mixed origin: pure native breeds were rare in the early years, and crosses of Ayrshire, Shorthorn, and Bohemian blood were largely adopted. There was naturally considerable variation in the milk yields; peasants' stock showed extremely poor results; on farms they appeared to have ranged between 350 and 500 gallons per annum. We should probably not be far wrong in estimating the average milk yield twenty years ago at 400 gallons. The butter ratio of this milk was certainly not more than 31. The annual yield of butter was therefore about 12,500 lbs. per cow. The advance in dairy methods and in the improvement of the stock, which we remarked in the case of Denmark, began to bear fruit in Sweden about twenty years ago, and is still in progress. From a recent Report, we learn that the average butter ratio in the creameries and factories is now 26, which, calculated even upon the former milk yield, would represent a gain of 30 lbs. of butter per cow per annum.

NORTH GERMANY.

Dairies of North Germany, with the exception of those of Schleswig-Holstein, are chiefly engaged in the production of butter, though they also manufacture small quantities of skim-milk cheese as well. Schleswig-Holstein is the chief seat of the butter industry. Denmark receives between 4,000 and 5,000 tons annually of Danish butter. Five hundred co-operative dairies exist in Schleswig-Holstein alone. It is worthy of remark, that official statistics fix the butter ratio at 25 to 28. Hence we may regard Denmark as practically the same throughout Denmark, Sweden, and North Germany.

UNITED STATES OF AMERICA.

In a country so vast and so various as the United States, it is impossible to arrive at any exact conclusions as to the average merit of the cattle. There are, undoubtedly, farms where the rate of production is very high, amounting in some well-authenticated instances to 300 lbs. of butter per cow per annum, and even more. On the other hand, the average cow seems to be but a poor specimen. Willard, writing in 1877, speaks of the average produce per cow in the Eastern States as about 100 lbs. A later American author, writing in 1881, places the average produce of the same States at the low figure of 125 lbs., whilst, according to the official census of 1893, the yield over the whole country was estimated to amount to no more than 130 lbs. All descriptions of cattle are used in the States for butter production, and even the Dutch cow finds there its partisans; but the majority of the cows are classed as "scrubs" or mongrels. The science of dairying is by no means ignored in the States; but at present it does not seem to have leavened the practice of the country to any appreciable extent.

CANADA.

Canada no longer makes and exports butter on the same scale that she did fifteen years ago, her attention being more directed to cheese; but there can be no disputing the high level to which she has attained in the practical management of her dairies. In no part of the world is the performance of the cow more jealously watched, and the general use amongst the farmers of an invention so modern as the Babcock Milk Tester bears witness to their enterprise. Canada fosters the growth of technical education in agriculture. Professor Robertson, speaking in East Ontario in January, 1892, stated that travelling instructors had visited 127 farms (cheese-makers) during the six previous weeks. Each inspector was furnished with a Babcock Milk Tester in order to give lessons to the farmers in the use of that instrument. In the Province of Quebec every county had been visited in the same way. In Manitoba, fifty meetings had been held before harvest time, at which the best methods of manufacturing butter had been explained; and—strange as it may appear to the technical educationalists of this country—these meetings drew together large audiences of farmers and provoked active discussion. It is an education in dairying to read the Reports of some of these Canadian conferences. As is the case in America, it is not possible to give representative figures of the milk and butter yield of their cattle; but we have ample evidence furnished

rough the factories of the rich quality of the milk. Thus at the Elgin Creamery, Ottawa, during the six summer months of 192, the milk showed the remarkable butter ratio of $21\frac{1}{4}$, or about 17 pints per lb. of butter. Other factories showed ratios varying from $22\frac{1}{2}$ to $24\frac{1}{2}$. Individual farms are mentioned, whose owners obtained from 230 to 243 lbs. of butter per cow. Examination, however, of the Reports of some of the Experiment stations, points to the conclusion that there is still room for improvement in the milk yield of the cows. The quality of Canadian milk is more satisfactory than the quantity of it.

TASMANIA.*

Tasmanian dairying is not at present in a very progressive condition. A friend, writing from Launceston in January of the current year, says: The cows are of a very mixed description, and are not adapted for butter production. Farmers milk them from November to April, when they are turned out in the scrub and subsist as best they can through the winter. They come back in a very poor condition, and in a hard winter the loss is very great, amounting in some instances to 20 per cent. of the herd. The average milk yield does not appear to exceed 360 gallons per cow, and the butter ratio, as testified by the creameries, is about 5. The average produce of butter per cow is therefore about 45 lbs. The butter is poor in quality, without texture or flavour, soft, and generally artificially coloured.

NEW ZEALAND.

Owing to an abundance of grass all the year round, New Zealand is one of the finest countries in the world for dairying. She was the first of the Australasian Colonies to start the trade in dairy produce with this country; her rapid progress, however, dates from 1888. In 1895, she sent us between 2,000 and 3,000 tons of butter. The Colony is a long way ahead of the old country in the manufacture of butter in large quantities, but is behind us in the care of cows and in feeding. The favourite breed of cow is the Ayrshire, but there are some good breeds of Shorthorns, and in some districts Jerseys, pure or cross-bred. In the Waikato district, near Auckland, where Reynolds and Co. (Anchor brand) have some large dairies, there are some good herds of Jerseys. To this circumstance we may fairly attribute the good butter ratio of the milk at Messrs. Reynolds'

* For the particulars of Tasmanian and New Zealand dairying I am greatly indebted to notes taken in 1896 on the spot by Mr. Arthur F. Somerville.

factory, viz. $22\frac{1}{2}$ lbs., or 1 lb. from 9 quarts.* No accurate statistics as to the milk yield of cows appear to be obtainable. One visitor states: "Milk varies greatly both in quantity and in quality on different farms, and the mean lies between wide extremes. Thus, in one factory in January, 1896, I found the butter ratio as bad as 45, and in another factory one as good as 20. Most factory managers agree that 25-26 would represent the fair average ratio." The "boom" in New Zealand dairying appears to be dying away; low prices have discouraged many farmers and led them to turn their attention to wool. At the same time there are districts where butter-making will hold its own, and with increasing chances of success; provided only that they proceed to develop the butter qualities of their dairy stock with the same energy and skill that they have perfected the mechanical processes of the dairy.

AUSTRALIA.

The exports of butter from Australia, which began quite recently, have increased from 800 tons in 1890 to over 12,000 in 1895; most of this comes from Victoria. This rapid increase is due partly to the bonus system (withdrawn by the Government in 1893), and partly to the excellent quality of the butter. Ayrshires and Jerseys are used both in New South Wales and in Victoria, and the ratio of the milk is stated to be generally 25. Throughout Australasia the farmers receive very low prices for their milk.

IRELAND.

When Mr. Lane gave his evidence before the Parliamentary Committee in 1885, he stated that it required 35 lbs. of average Irish milk to produce 1 lb. of butter by the ordinary processes of setting and churning. Since that date the introduction of factories and the use of the separator have reduced that ratio; but according to audited returns of the Irish creameries recently issued, the average butter ratio still stands at the abnormal figure of 30, or 1 lb. per 3 gallons of milk. In justice, however, to the Irishman, we must point out that the monthly record published by the creameries shows frequently a much better ratio. Thus, in August, 1893, the returns from thirteen factories, dealing with upwards of 21,000 gallons of milk per day, showed a butter ratio of 25. Again, in July, 1896, it was stated in the 'Dairy' newspaper that the produce of the best Irish creameries was 1 lb. from every $25\frac{1}{2}$ lbs. This is a substantial improve-

* This ratio is quoted by Mr. W. E. Bear, 'Australasian Competition in Dairy Products,' *British Dairy Farmer's Journal*, vol. x., part 1, p. 29.

nt, and marks a great economic advance in Irish dairying. vertheless, no one acquainted with the subject can visit land without being made aware of the wide field which sts for improving the breed of butter cow, and obtaining ger yields and better ratios. Irish cattle, says Professor rroll, are a very mixed lot, consisting of Ayrshires, Longhorns, ilderness, Dutch, and Shorthorns; in the north-west only is re to be found a remnant of the old breed—Kerries.

In 1879, Professor Sheldon, lecturing before the Royal Dublin ciety, estimated the average milk yield of Irish cows at 0 gallons per annum; the average butter production would, erefore, be between 140 and 170 lbs. per annum.

GREAT BRITAIN.

When Mr. R. H. Rew read his paper on "Milk Production Great Britain" before the Royal Statistical Society in May, 1892, he quoted the following estimates of the average annual roduction of milk per cow in the United Kingdom:—

Moreton, 1885, gross yield	320 gallons	} Gross yield, mean 442 gallons.
Sheldon, 1879, "	..	..	440 "
" 1889, "	..	..	460 "
Turnbull, 1890, "	..	..	448 "

To these estimates Mr. Rew contributes a new one of his own, ased upon returns received from various farms in seventy-four istricts of England, Wales, and Scotland. The mean of all hese returns is 528 gallons per cow. From this gross total here remains a deduction to be made for milk consumed by he calf. The net amount of milk estimated to be available or purpose of sale, or of conversion into butter and cheese, s 435 gallons. Mr. Rew's net estimate is therefore very earily equal to the mean gross estimate of the three previous uthorities. If this new estimate is a sound one, it represents . great advance in the productive power of our cattle (or other- wise a strange under-estimate of their capabilities in the past); nd this at least may be said in its favour, that 435 gallons of milk f average quality converted into cheese or butter, would yield hat we have been taught to regard as the annual average produce f our cheese and butter dairy-cattle. Thus of new hard cheese ot allowing for shrinkage), 435 gallons is equal to producing a little over $3\frac{3}{4}$ cwt. Now, $3\frac{1}{2}$ cwt. per cow was the average ield fixed by an authority on Somersetshire dairying, writing n the year 1795, and the same amount was stated to be the average yield in Gloucestershire by the author of the Prize Essay published in 1850 by the Royal Agricultural Society of

England. Again, a butter ratio of 25, which is generally accepted as a fair average, would give about 175 lbs. of butter per cow, an amount which very closely corresponds with Mr. Gibbon's estimate of the yield of an average cow, viz. 180 lbs. per annum.

SUMMARY.

Let us now gather to a focus the facts relating to the production of cows which are scattered through the preceding pages :—

	Milk Yield.	Butter Ratio.	Butter Yield.
	galls.		lbs.
Denmark	550	26	210
Sweden	475	26	180
North Germany .. .. .	..	26·5	..
United States America .. .. .	..	..	130
Canada .. .. .	..	21-25	200
Tasmania	360	25	145
New Zealand .. .. .	..	22-26	..
Ireland	430	30	145
Great Britain	435	25-30	145-174

It is scarcely necessary to say that the figures given in the above table do not profess to be exact ; they must be regarded as an approximation to the truth based on the best evidence that is accessible to the writer.

DECLINING BUTTER RATIOS.

They will serve their purpose if they furnish evidence of the fact, which seems to be indisputable, that a decline in the butter ratio of milk, or, to put it in other words, a rise in its productive power—is almost universally in progress. The rate of movement varies in different parts of the world according to the energy and intelligence brought to bear on the industry ; but it is visible in the records of nearly every country. This advance—for we have already shown that every fall in the ratio is an economic gain to the butter-maker—is due in part, no doubt, to an improved class of stock. There are districts, not only in the United Kingdom but in Denmark, America, Canada, and Australasia, where the effect of careful selection and of feeding may be traced in the results of the dairy. But on the whole, we are not inclined to attribute any material part of the advance to an improvement in the cattle. The influence of better methods, and of more perfect appliances in the dairy, are much more direct and obvious.

We have spoken of the decline in the ratio as still *in progress*; **w**e must also point out that it tends to become constant about the point of 25. So far as we are aware, no country has yet succeeded in obtaining a general average ratio, all the year round, of less than 25—or 1 lb. of butter from $2\frac{1}{2}$ gallons of milk. At this point, therefore, it appears probable that improvements in dairy processes have for the present exhausted their energy, and that we cannot look to new machinery nor to better methods to help us much beyond it.

A NORMAL RATIO.

Are we prepared to adopt the ratio of 25 as a normal standard? If we *are*, it follows incontestably that butter-making must continue to rank behind both milk-selling and cheese-making as a profitable industry in this country. A farmer in the United Kingdom reasonably expects an average price of 6*d.* per gallon for his milk, whether he sells it whole or converts it into cheese or butter. He cannot realise this price from butter-making when the milk carried into the dairy is of so unsuitable a quality that it takes $2\frac{1}{2}$ gallons to make 1 lb. of butter. For the milk alone represents a value of 15*d.*, and this is a price which he will hardly obtain for 1 lb. even of the best fresh butter, unless he chooses to take the risks and petty worries of a retail business. The wholesale price would scarcely exceed an average of 14*d.* per lb. for the year. We therefore come to an *impasse* in the industry of butter-making in this country, and must either acknowledge that we are unable to recover it from the foreigner, or else must proceed to inquire what hope lies in the direction of an improved raw material. What can be done by more careful selection, breeding, and management of our stock?

ENGLISH EXPERIMENTS ON DAIRY STOCK. 1892-96.

Some light will be thrown on these questions if we examine the results of the special efforts which have been made during the last few years to gain accurate information on the composition of milk and on its practical adaptation to the needs of the butter-maker. The sources from which we shall draw will be:

The records of the milking trials of the British Dairy Farmers' Association, 1892-95.

The butter tests of the same Association, 1893-95.

Lord Rothschild's butter tests at Tring, 1894-96.

SHORTHORNS AND JERSEYS : YIELDS OF BUTTER-FAT.

During the four successive years 1892-95 the Dairy Farmers' Association tested the composition of the milk of 46 Shorthorns and of 63 Jerseys; and the result showed that the average yield of butter-fat from the Shorthorn cattle was 1·846 lbs., or about 1 lb. 13½ oz. per day, while that from the Jerseys was 1·476 lbs., or about 1 lb. 7½ oz. We may therefore conclude that in the production of butter-fat an average individual Jersey cow, as compared with an average individual Shorthorn, is the inferior animal by 6 ounces of butter-fat per day, or nearly 20 per cent. deficiency.

SHORTHORNS AND JERSEYS : YIELDS OF BUTTER.

But if we pass from the consideration of the butter-fat to the actual butter yielded by the two breeds, we shall see cause to modify our judgment.

During the three successive years 1893-95, 30 Shorthorns and 57 Jerseys competed in the public butter tests of the British Dairy Farmers' Association. At Tring Park, during the four successive years 1893-96, 65 Shorthorns and 116 Jerseys were tested. In both series of tests by the churn the results showed a remarkable uniformity, and therefore to avoid unnecessary repetition of figures we shall mass the results together. The total number of Shorthorns tested by the two Societies was 95, while the Jerseys numbered 173. The mean yield of butter from the Shorthorns was 1 lb. 11¼ oz., while the mean yield from the Jerseys was 1 lb. 10½ oz. It appears, therefore, that though the larger breed produced 6 ounces more butter-fat than the smaller one, yet as producers of butter the smaller breed actually approached within less than 1 ounce the yield of the Shorthorns.

This disparity between the *practical* value of the butter-fat derived from the milk of the two breeds has been so frequently noticed, and is now confirmed by so lengthened an experience, that we shall not dwell upon it here. No authoritative scientific explanation has been given of the cause, which is the more to be regretted because the question concerns not only the milk of these two breeds, but also, in varying degrees, the milk of most other breeds of dairy cattle.

SHORTHORNS AND JERSEYS : BUTTER RATIOS.

The butter ratios of the milk drawn at these tests shows a remarkable difference: that of the 173 Jerseys being 19·05, or less than 8 quarts of milk per lb. of butter; that of 95 Shorthorns being 28·55, or over 11 quarts per lb.

LIVE WEIGHT AS A FACTOR IN THE COMPARISON OF DAIRY CATTLE.

Before the comparison can be completed, there is yet another point in connection with these tests which demands our attention. At the Tring butter tests, and in the milking trials of the British Dairy Farmers' Association, each cow was weighed. The aggregate number of Jerseys competing was 189, and they ranged in weight from 630 to 1,134 lbs., while the mean live weight of the whole was 839 lbs.; the Shorthorns numbered 111, and they varied from 966 to 1,729 lbs., while the mean live weight was 1,339 lbs. Thus, between the individual Jersey cow and her competitor there was a mean difference of 500 lbs. live weight.

Now it is obviously impossible to institute a fair comparison between the merits of these two breeds as butter cows (as also between the merits of such breeds as the Angelu of Denmark and the great Dutch cow), without taking into account this fundamental difference.

FOOD RATIONS BASED ON LIVE WEIGHT.

Modern science has taught us to feed our cattle, whether for the dairy or the butcher, upon a rule proportioned to their live weight. Cattle of one stated weight are to be fed according to a certain standard ration; cattle that exceed or fall short of it are to have that ration correspondingly modified. Professor Fleischmann, whose book on 'The Dairy' is now translated into English, says on page 44: "The supplying of nourishment of a suitable kind and quality should not be left to the promptings of Nature nor to the caprice of the animal, *but should be regulated by regular laws and varied according to the live weight.* For this reason it has been agreed to regard as the standard of comparison for the measurement of the food requirements of domestic animals the live weight of 1,000 lbs."

Nor is this merely an academic opinion which English agriculturalists may dismiss with a shrug. It has the sanction of names that carry weight as authorities on practical farming. Arthur Young, writing in 1799, points out that many cows esteemed good milkers do not yield a due proportion of milk, nor even a quantity of milk proportioned to their size. He adds: "All cattle eat nearly in proportion to their size, and if they do not give milk in proportion to their size, they are not profitable for the dairy." And Mr. R. Stratton, writing in the *Journal* of this Association nearly a century after Arthur Young, records the same opinion in these words: "Speaking broadly, beasts eat in proportion to their size." Where both

science and practice are agreed, we need not hesitate to enforce the moral.

Cattle require food in proportion to their size, so the cost of their maintenance, in so far as food is concerned, will vary also in proportion to their size. Therefore, if we wish to make a true comparison of their merits we must apportion produce to live weight in the same way as the formulators of the albumenoid ratio apportioned food to live weight.

SHORTHORNS AND JERSEYS: PRODUCE PER 1,000 LBS. LIVE WEIGHT

Applying this principle to the produce in butter of Shorthorn and Jerseys in the tests under review, we find that—

					Butter per day.
173 Jerseys yielded per 1,000 lbs. l.-w. an average of 1·974 lbs.,					or 30½ oz.
95 Shorthorns „ „ 1,000 „ „ „				1·277 „	or 20½ „

RECAPITULATION.

The following conclusions are based upon the data furnished by this interesting and valuable series of experiments:—

	Per d — lbs. c
A.—The actual mean yield of butter-fat per Shorthorn cow is	1 1
The actual mean yield of butter-fat per Jersey cow is ..	1
B.—The actual yield of butter per Shorthorn cow per day is	1 1
„ „ „ Jersey „ „	1 1
C.—The actual yield of butter per 1,000 lbs. l.-w. is for the Shorthorns	1
The actual yield of butter per 1,000 lbs. l.-w. is for the Jerseys	1 1
D.—The mean butter ratio of Shorthorn milk is 28·55, or 1 lb. from over 11 quarts.	
The mean butter ratio of Jersey milk is 19·05, or 1 lb. from under 8 quarts.	

THE VALUE OF MILK FOR BUTTER-MAKING

Repeating our former illustration, where we assumed the selling price of butter to be 1s. per lb., which we need not say is very low for fresh butter of fine quality, we find that Jersey milk of the quality tested in these experiments would return 6½d. per gallon, while Shorthorn milk would only give 4½d. per gallon.

IS BUTTER RATIO OF 20 A FAIR ONE FOR JERSEYS' MILK?

In an article published five years ago in this 'Journal' on Jersey as a Butter Cow," we stated our reasons for holding that 1 lb. of butter from 2 gallons of milk was a fair average experience with Jersey milk; and nothing has occurred since that interval to make us think our estimate too favourable. On the contrary, we believe that in the case of Jersey cows, a fair average ratio throughout the year may be obtained in dairies where care and vigilance are exercised in the management of stock.

In confirmation of this statement we submit a chart showing the ratios from a herd of 30 to 35 Jersey cows during the 1894-95-96.

EXPLANATION OF THE CHART.

The table is divided by vertical lines into 52 columns, representing the 52 weeks in the year. The dark horizontal lines numbered from 14 to 27 show the number of pounds of butter required in each successive week of the year to make 1 lb. of butter. The lighter rulings between the dark horizontal lines show fractions (fifths) of 1 lb. The average butter ratio for each year is indicated by a thick black line across the table.

TABLES I. AND III. 1894 AND 1896.

In these two years the milk used in the dairy was mainly from the Jersey herd, only a small quantity of Shorthorn milk being put out 50 gallons per week—being bought in the last few weeks of 1894. In 1896 there was a decline in the butter ratio during part of the summer, owing to the withdrawal of some of the best cows to attend agricultural shows; but on the whole the butter ratios of both years correspond pretty closely, and the mean average of each year differs by a mere fraction from the standard of 1 lb. of butter from 7 quarts of milk.

TABLE II. 1895.

In this year a certain proportion of milk was purchased from the market. The cows which yielded it were of the ordinary Shorthorn type: useful animals for cheese-making or for production of milk for sale, but *not* butter cows. The milk, however, was frequently tested separately, was of fair average quality—that is to say, it seldom required more than 3 gallons to make 1 lb. of butter. The quantity bought varied from week

to week according to the needs of the dairy, and after the second week in October it was discontinued altogether. During the rest of the year the proportion of bought milk was as follows:—

1st January—31st March, 13 weeks, about 25 per cent. Shorthorn milk.				
1st April—30th June, 13 weeks,	"	33	"	"
1st July—30th September, 13 weeks,	"	40	"	"

The effect of the introduction of this milk into the dairy was very apparent. The butter ratio was not only very low, but very irregular. Sometimes it sank to 11 quarts of mixed milk to 1 lb. of butter; but directly the use of the bought milk was discontinued, it jumped up to the normal level of 1 lb. from 6 quarts, and remained there.

QUALITY OF THE BUTTER FROM MIXED MILK.

The quality of the butter also suffered to some extent, as it was much less firm than that made from Jersey milk.

RETURNS OF MILK PER GALLON.

Supposing that it had been necessary to accept the price of 1s. per pound for this butter, what would have been the returns for milk?

If Shorthorn milk of the quality supplied had been used alone (*i.e.* without any admixture of Jersey milk), the return would have been about 4*d.* per gallon; with mixed milk, in the proportions used in 1895, about 6*d.* per gallon; with Jersey milk alone, as in the years 1894 and 1896, about 7*d.* per gallon.

CONCLUSIONS.

1. The butter ratio of 25 is by no means a standard ratio. Butter may be produced all the year round from mixed milk at a ratio of about 22, and from Jerseys alone at considerably less than this.

2. A cow may yield a large quantity of butter-fat in her milk without producing a corresponding amount of butter. (Factory managers who use the Babcock Tester will do well to bear this fact in mind.)

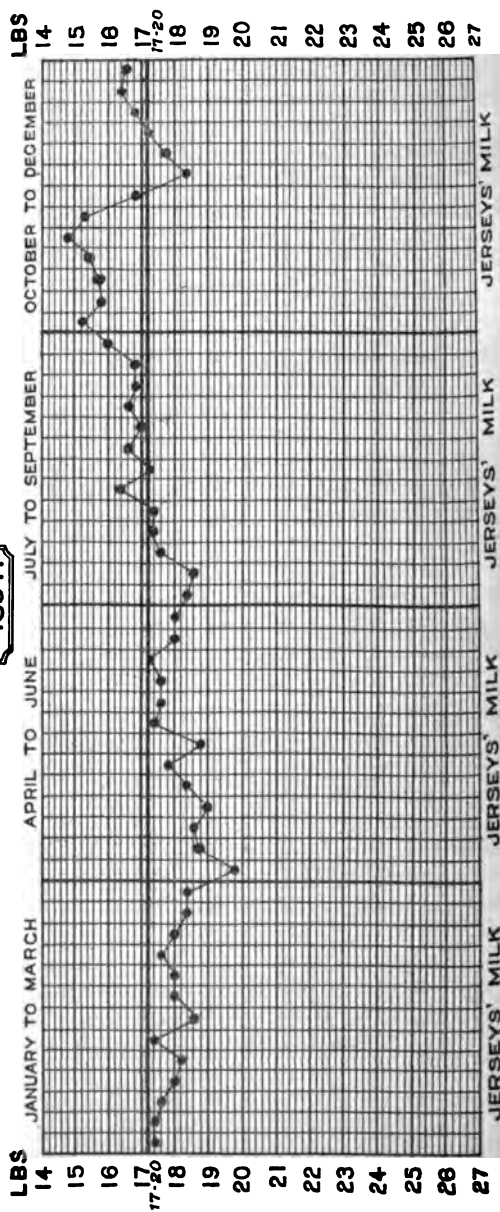
3. A cow may yield a large quantity of butter, and yet, owing to the cost of her maintenance, be unprofitable in the dairy.

4. No true comparison of the merits of butter cows is possible where the question of relative live weight is disregarded.

5. Small cows producing a moderate quantity of rich milk

✦ *Chalcoate Manor Farm* ✦
 NEAR WELLS - SOMERSET.
BUTTER-RATIO CHART
 30 TO 35 COWS

1894.



re better for butter-makers than large ones yielding an abundance of thin milk.

6. Milk of a quality so poor that it takes 30 lbs. to produce 1 lb. of butter cannot be profitably converted into butter. It had better be sold as whole milk, or used for cheese-making.

7. A good butter cow, properly treated, will yield annually in her prime a weight of milk equal to seven times her own live weight; and this milk will be of such a quality that 7 gallons of it will make 1 lb. of butter throughout the year.

IV.—*Some Systems of Potato Planting.* By W. J. MALDEN.

SUPPLY AND DEMAND.

THE potato ranks among the few crops which have not decreased in acreage during the past few years, and are yet capable of giving a profitable return. More interest is therefore centred in it than in most crops; but all the potatoes grown do not give a profitable return, especially in prolific seasons when the effect of over-production is seriously felt. For a number of years the extent of potatoes grown under field culture in Great Britain has been slightly in excess of half a million acres, but there are undoubtedly many more grown on allotments; and these do not find their way into statistical returns, although they, doubtless, affect the quantity of potatoes which are available for sale. When the acreage is more than 20,000 acres in excess of the half million, more are produced than are required, and the price falls in sympathy with the over supply, unless an unseasonable frost, or an exceptional amount of disease, curtails the yield. Better methods of cropping, and better varieties have, doubtless, had the effect of increasing the yield per acre. The speculative nature of the crop, and the hope of a happy stroke of fortune, induce many to embark in its cultivation, so that, as a rule, the quantity of potatoes put upon the market is such as to keep prices at a lower level than they were a few years ago; this entails loss to those who are not favourably placed as regards soil and climate, or do not possess exceptional skill in the selection of varieties, and in the management of the crop. As a rule, those who are most skilful secure a profit. It is a striking fact that the acreage continues fairly constant, and, as one hears of many aspiring new growers, there must be an equal number retiring from it, disheartened by their inability to compete with those who

are better equipped in all ways to fight against low prices. As the prices are kept in check by the full acreage grown, it is important to practise the best methods of cultivation and management, there being exceptional expenses connected with this crop that render it more expensive than ordinary farm crops.

EFFECT OF SOIL ON THE CROP.

No inconsiderable portion of the failures to make potato growing profitable are due to the selection of land unsuitable for the production of a heavy crop of good quality. Taking one season with another neither quantity nor quality can be neglected. Prices being low, quantity is required in order to make a profitable return; but as there is, as a rule, a full supply, and as only the best secure a ready sale, quality is more than ever essential. There is much land devoted to potato growing which, taking one year with another, cannot under the best management give a profitable return. It may do well in one year when the season favours it and prices happen to be specially good, but succeeding years will put a heavy debit on it. There is an old saying of that risky and speculative crop peas—"many a man has been ruined by a good crop," he having extended his acreage and looked for similarly good yields again, which have been too slow in coming; there is little doubt but that the same might be said of the potato crop. My advice to those who have land not suited to the growth of potatoes is not to grow them. It is a waste of capital and energy which will become apparent some day. There is some difficulty in definitely stating what is suitable land, for in some seasons profitable crops are grown on land totally unsuited for their growth when the climate is exceptionally favourable. Thus, for instance, the black fen lands in wet seasons produce potatoes of most inferior quality, while, as in the past few years when hot dry summers have prevailed, they have been by no means the least profitable, although with a return to ordinary wet seasons, which will come again for certain as the years roll by, the fen potatoes will be unprofitable, through their want of quality.

Soils which are susceptible to the ill-effects of drought, or which do not retain friability during wet seasons, are dangerous. Those which are friable, deep, and are not readily affected by excessive drought or rain, are the best suited for potato growing. The soils which can be most relied upon for quality and quantity are the better old and new red sandstone, or the stronger greensands; those, in fact, which may be described as deep light loams. The reasons why such soils are favourable for the

crop are, that they are naturally drained or are easy to drain ; they are easily pulverised and remain friable in wet weather, but retain sufficient moisture to keep the plants growing through ordinary droughts ; they are warm ; and the lifting of the crop can be conveniently effected in almost any weather, provided it is not actually raining at the time. Heavy soils are unfavourable, because in wet seasons they retain moisture near the surface, and the tubers lie in a cold bath, which produces a chill, and prevents the maturing of the tuber which becomes hard, sodden, and cannot be cooked to a mealy consistency. Moreover, the chill often causes the tubers to go black at the time of cooking. Fen soils, as they contain a large amount of humus, are retentive of moisture, and it is chiefly on this account that the tubers are of bad quality in wet seasons ; this is shown by the fact that in unusually dry seasons they possess fairly good cooking properties. Heavy soils consolidate readily, and the surface is liable to set hard. This has several marked results,—the tubers shape badly, the absence of air in the soil checks the formation of plant food ; they are difficult and expensive to work ; the ridges are liable to crack, and thus render the tubers directly accessible to the spores of the potato disease.

SOILS SUITABLE FOR THE CROP.

Ordinary loams, from light to medium, may be regarded as being suitable, and these may comprise any from soft warp land to sharpish gravel loams. Some lightish loams, however, have a tendency to run together and set harder than casual observation would suggest, and these are less favourable for potato growing than are those of apparently the same texture, but which have less “natural cement,” and are therefore more friable. Shallow soils, especially those which rest on impervious subsoils, such as stiff clays or rocks, are not reliable, as they too readily feel the effect of drought, or in wet seasons the effect of moisture which cannot escape readily. Thin soils, such as those resting on chalk, are not suitable, as it is difficult to make them hold sufficient nutriment for a heavy crop, and, if such a crop is obtained, sufficient soil to mould them properly cannot be provided without bringing up the chalk, which is prejudicial to the land afterwards.

EFFECT OF CLIMATE ON THE CROP.

It may be admitted that quantity is to a large extent controlled by manuring and cultivation. The maximum yield varies, however, from one season to another, as in a favourable

season far more will be grown than in an unpropitious one, although the same methods are adopted in each. A favourable season is one in which the land is fairly moist, and there is a liberal amount of sunshine. Cold, wet, sunless summers do not favour the development of tubers. Of course years of excessive drought dwarf the plant so that it cannot produce large tubers. Years in which the yield is poor, owing to an excess of cold and wet, are generally associated with poor quality.

PREPARING SOILS WHICH ARE NOT MOST SUITED TO THE CROP.

It is obvious that where a soil does not possess the natural characteristics of a typical potato soil, it must be brought as near to the standard as possible; and this has to be effected chiefly by mechanical means. The mechanical alteration in almost all cases must be of a temporary nature, as such alteration, if it is to be permanent, entails an outlay upon which there can be no possibility of obtaining sufficient return to secure profit. The alteration must be chiefly effected through tillage, although drainage and manuring play their part. As an extreme case, where even the best treatment is not certain to insure success, take a heavy clay soil resting on a strong clay subsoil; it will illustrate what points require looking to in a modified degree for a less unfavourable soil from which it is desired to obtain a crop of potatoes. The soil will have to be brought to a dry friable condition; its tenacity and tendency to run together when wetted should so far as possible be destroyed. This can rarely be achieved without a prolonged fallowing, and as the crop has to be planted in spring it is important to break it up in the autumn, so that it may be under the influence of winter frosts and other climatic forces. It should lie in big clods, so that the weather may have full power over it, and to prevent the consolidation which would take place if rained upon when finely reduced. To assist in the winter draining and aëration it is an advantage to apply the farmyard manure before it is ploughed; but manure which is to lie in the soil through winter, at the risk of the soluble portions being washed out, should be as raw as possible, so that there is little soluble matter to be dissipated. After lying through winter the land should not be disturbed until the horses can walk on it without poaching it; it is far better to lose a few weeks at the time of planting, than to stir it while in anything approaching a sodden condition, as it can only prove more troublesome and more expensive to deal with, and the mellowness which should be obtained when it dried would be lost. When it is fit to work, ordinary tillage opera-

is are sufficient. But on heavy soils, really stiff clays, a surface tillage is not sufficient, and to get an open subsoil it must be loosened, and the cultivator should be used in conjunction with the plough. The risks are too great to incur the expense of digging the subsoil; over-deep ploughing is not to be recommended, as it is dangerous to bring up the subsoil, unless it is known not to contain prejudicial matter, whether in the shape of soil which will prove troublesome to deal with, or seeds of weeds which will be difficult to destroy.

INFLUENCE OF THE SUBSOIL.

The subsoil must be porous if potato growing is to be successful, and one of the chief reasons why heavy soils are not suited to potato growing is that the subsoil cannot be rendered porous without the expenditure of an amount of money for which there is no chance of an adequate return. Without working the subsoil there is little chance of a good crop; but even this is not sufficient to ensure one, for subsequently the weather may be unfavourable to the production of a suitable crop, so that the previous work is almost entirely wasted. Notwithstanding this a considerable quantity of potatoes are planted on heavy land which has received little working, and inevitable failure results.

HEAVY LOAMS.

Coming to heavy and medium loams which possess some of the characteristics both of heavy soils, and of lighter ones more suitable to potato growing, there is reason to expect that with good management and average seasons profit may be obtained. It cannot be too strongly maintained that the subsoil has a great influence on the suitability of a soil for the growth of potatoes; and in deciding whether a soil is too heavy for the purpose or not the subsoil must be considered. This is not sufficiently borne in mind, or if it is, it is not acted upon so frequently as it should be. There are plenty of soils in themselves well suited to potatoes, but which, owing to the subsoil on which they rest, rarely prove satisfactory. On soils such as these subsoiling or deep stirring acts beneficially; while more thorough drainage will often tend to lighten them materially. As a rule it is not advisable to plant early or tender varieties on these strong soils, varieties of the type of the Up-to-Date, Wonder, or Stourbridge Glory, which possess great vigour and yet can produce excellent quality, are best suited for the purpose, as there are sure to be difficulties at one or another period of the season of growth, and as vigorous plants receive a check which shows itself in the

quality or quantity of the tubers. Any land which is going to be planted with potatoes in the spring is better for being ploughed or broken up in autumn, though it is not always possible to effect this, as the land may be carrying a crop; but as a rule it is best to break up that which is heaviest first, so that it may have the best chance of weathering; really light land can be brought to a tilth in a short time, and though autumn working is decidedly advantageous, it is not so imperative. It is also an advantage to get the farmyard manure on the heavier land in autumn or winter, provided it is not too much decomposed; and although it is contrary to ordinary scientific teaching on the point of waste of soluble matter, I know many large and successful growers on light soils who prefer to put on rotted manure in autumn, even though some of the goodness is wasted, as they have found that its thorough incorporation with the soil has improved its mechanical condition, and that the yield of potatoes has been better than when it has been applied in the spring. They have come to this conclusion after comparing the effects for a number of years. There is one point, however, which should be stated, and that is that the greater portion of the potatoes they grow are either earlies or second earlies, and they would probably hold other views if their crops were mainly late kinds. The earlies are in the land but a short time, and the chemical changes in the manure are slower than at the later and warmer period when main crop varieties make their chief growth; so that the extra period occupied by the later potatoes gives a longer period for the manure to become available as plant food.

AUTUMN WORKING OF THE LAND.

When arranging the order of working the land in autumn with the view of preparing it for potatoes, there are two points to bear in mind; the heavier should be worked first, and that which is to carry early varieties of potatoes should be manured early.

Hard pans below the furrow are more common than is generally recognised; the constant treading by horses causes the land to become almost impervious, although neither the soil nor subsoil may suggest likelihood of it. Natural pans also form on some soils independently of the treading. When these pans exist, the land becomes easily affected by drought or excessive rain. Some very noticeable instances of this have come under my immediate observation in connection with potato growing, for before the breaking of the pans the land seemed hardly worth cultivating, and it is now among

be best. The good effects of double digging and trenching result frequently from this pan breaking, as such pans undoubtedly exist where they are little suspected. The land is said to burn a great deal, or it works badly, considering it is well drained, and the real cause is overlooked. Deep working of the soil is undoubtedly desirable if only to loosen the subsoil, but where the surface soil is not particularly good the cost of subsoiling is sufficient to incur, although on a small scale double digging or trenching rarely fails to make a great difference to the yield. As far as a farmer growing potatoes in open fields is concerned it is rarely advisable to incur the expense of spading or forking the subsoil, although a market gardener who grows other crops subsequently which are capable of giving a big return will often find it to his advantage to do so. For farm purposes extra deep ploughing or the use of the subsoiler will effect a reasonable amount of good.

EFFECT OF DEEP WORKING.

Deep working tends greatly to the increase of the crop. Of late years I have used the chilled breast-digging plough with much advantage; even for autumn and winter ploughing I prefer it. The consolidation of the core of the furrow which is effected by the ordinary plough is a feature distinctly opposed to the end in view—that of making the land light and friable. There are still those who prefer the old style of ploughing, on the ground that it leaves a high crest on the furrow, and that water runs off it more freely; but the digging breast leaves the land loose, so that air and water alike pass through it freely, and it does not run together objectionably; land which does run together under such conditions is not suitable for potato growing, as it will do the same when the crop is planted if there is an average amount of wet. When the greater amount of work which is done by the digging plough is considered, the further advantage of the implement is seen. I can personally testify to the better working condition of the land in spring, even on strong loams, since I gave up the old type of plough.

Deep working is also conducive to good quality, as in times of drought the potatoes rarely receive such a check as to stop tuberation, and harden the skins. Where the work is shallow a drought is soon felt, as the moisture rapidly evaporates; when this is the case tubers ripen prematurely, and when rain ultimately comes they develop second-growth, the most common form of which is the bulging of one end, making them dumb-bell-shape. Potatoes which have second-growth never cook well, and cannot rank as first quality. The retention of moisture in

times of drought is one of the most important points in potato growing, and it is for this reason that exceptionally heavy dressings of farmyard manure, sometimes exceeding 40 tons per acre, are employed on soils, such as sand or gravel, which are deficient in organic matter. Such heavy dressings supply far more manure than is required by a crop of potatoes, and those who use it are aware of the fact, but they apply them as an insurance against drought.

THE MECHANICAL CONDITION OF THE SOIL.

The application of earth or mould to alter the mechanical condition of the land is in most cases too expensive to warrant its use. On very light soils deficient in lime, however, a dressing of chalk or marl is useful, as it cools the land and supplies lime, which is very essential in potato growing.

An excellent way of adding to the organic matter in soil is to plough in green crops, such as mustard, turnips, and others sown as catch crops in the early autumn, and the same good effect is obtained by ploughing in leys with a good growth on them. When this is done the full advantage of artificial manures, applied subsequently for the potato crop, and, which are of comparatively small cost, is obtained.

SPRING WORK.

The spring work is of course more directly associated with the preparation of the seed bed and the planting of the sets. The actual treatment of the land depends on the nature of the soil and the system of planting to be adopted. There are three distinct systems of planting, and each is subject to variation: they are commonly described as planting on the Ridge, on the Flat, and on the Lazy bed. The first embraces those systems where land is laid up into ridges before being planted. The second comprises those in which the surface is left flat, as in the case of corn sowing, until after the potatoes are planted. In the third the land is laid up into beds, with trenches between, after the manner usually adopted in asparagus beds. In all it is desirable to get the land into as dry and friable a condition as possible.

THE SEED BED.

The working of the seed bed should be done in such a manner that it is left light at the finish; it is doubtless for this reason that the ridge system proves so successful, as the mould is turned lightly on to the sets by the plough after the horses drawing it

passed by. Where the ridge system is not adopted the rig of the land and working it to a tilth should, when possible be done with implements that tend to lighten rather consolidate it. Implements with curved tines lift the soil and pass through it. Those with straight tines do so to a far less degree, while chain harrows and rollers consolidate it. The curved tines of the recently introduced spring-pressure harrows are very well suited for cleaning and stirring tilths; and, as what allied to them, Howard's sickle-tine cultivator has added itself a very valuable implement, as the set of the tines such as to comb out any rubbish, and the land is well lifted and agitated. There is nothing special, however, about the preparation of a potato tilth beyond what is necessary for a turnip except, that being performed earlier in the year, it requires more attention and more care, and it is scarcely necessary to say that the subject of tilth preparing here; the methods adopted for actual planting are of more interest.

THE RIDGE SYSTEM OF PLANTING.

When the land having been brought to a fair tilth, it is laid up into ridges. There are points in favour and points against laying farmyard manure in the furrows between the ridges at this time. The main objection to it is that in a wet planting season much difficulty is experienced in getting over the work at the most profitable time for planting. Within a short space of time the land has to be ridged, the manure carted on and spread, the rows laid in the rows, and the ridges split back over them. These operations call for a large supply of horse labour, and, on a well-managed farm, provided the weather is favourable, this may be accomplished; but in a wet season the work drags on longer than is desirable, and the tilth already obtained is more or less destroyed. It is often urged also that potatoes in the dung are liable to fall a ready prey to the potato beetle. This opinion has been held for many years, and experiments have generally supported it. In favour of placing dung in the ridges is the important circumstance that the soil lies lightly, and during the decay of the dung it still continues light, thus affording a bed in which the tubers ramify freely, and the tubers are not pressed out of shape; the lightness of the soil also renders digging more easy, as there is a definite parting between the soil and the subsoil. Land in this condition is easily dug by means of potato-digging machines, at least where labour is short. It also allows dung made in the autumn to be applied, and, as it is not always convenient or desirable to have the dung in readiness for application early, it

is an advantage to have that which is made late in the season applied in this manner. The manure is immediately under the plants, and therefore accessible. Whether there is much advantage in this is doubtful, for where manure is well incorporated with the soil it is sufficiently within reach of the far spreading roots. There is a disadvantage in applying very dry dung in a dry season, as it diminishes capillary action, and plants thus suffer for want of moisture. I have seen several instances of this during the past few drougthy years. It is particularly desirable in a dry time that the plough should follow closely behind the dung cart, so that the manure may not become over dry.

PREPARATION OF RIDGES.

Where land has been reduced to a tilth, the laying up of the land into ridges is light work, and it is a distinctly expensive operation to plough but one ridge at once. Multiple ploughs making two or more ridges are far preferable and quite as effective, although they are seldom used. An idea seems to prevail that the draught necessary to make a ridge is considerable. This is largely due to the foolishly heavy-draught ploughs in use in many districts. The principle of construction is wrong, and this entails the need of using long mould-boards to form ridges. Equally effective and far lighter mould-boards can be obtained. Much of the excessive draught is caused by the breasts not being more raised at the back, being kept too horizontal throughout their length; they are also wider at the bottom of the furrow than they need be; as the work is done by compression, it is easy to realise how great is the amount of friction at that point. The principle of working is that of drawing a wedge through a space too narrow for it. Simple mould-board frames carrying shorter mould-boards greatly lighten the work, and render it possible to get over far more ground in a given time.

DISTANCES APART TO PLANT.

The space between ridges depends largely on the variety of potato planted. It may be accepted that for a fine growing late variety, 27 inches is the minimum that should be adopted, as thorough moulding up with a plough is not possible at a narrower width. For early varieties to be dug green, as little as 24 in. \times 14 in. may suffice; while for very early varieties subjected to hand-cultivation, 20 inches may be sufficient; but circumstances alter cases. The distance apart at which the sets are placed in the rows must be taken into consideration, as 20 in. \times 18 in. gives the same area to each plant as 30 in. \times 12 in. The

size of the seed also affects the distance, as strong seed is likely to produce a more vigorous plant, with more power to search for nourishment. Varieties possessing great vigour, and liable to produce excessively large tubers, require planting closer in order to prevent the formation of coarse tubers, which are of little value. As a rule, we plant our own in 27-inch drills, placing such as Myatt's a little over a foot apart; free-growing earlies, such as Cole's Favourite and Market Favourite, 14 inches from set to set; and late heavy croppers, such as the Wonder and Up-to-Date, 16 to 18 inches, according to circumstances.

The sets may be dropped between the ridges by hand, or by a planter, after which the earth requires to be turned over on to them. The most general method is to split the ridges with a moulding-plough, so that a new ridge is formed over the sets. There is perhaps no way preferable to that of pulling down part of the ridge by means of a 3-tined hand-hook. When this is done, about half the ridge is pulled down, a piece being taken out opposite each set to cover it. The mould thus lies lightly on it, and, provided there is sufficient to protect it from frost, it is likely to produce stronger shoots than when buried deeply away from the sun. The remaining portion of the ridge can be pulled down subsequently, and, as it need not be done until such time as the weeds have germinated, it destroys those which are over the sets by smothering them, and those on the ridge by disturbing them. Hand-hoeing is then rarely required, except for cutting thistles which may come up in the rows. Horse-hoeing once or twice before final moulding completes the tillage operations. Under this system horse labour is spared at the time of planting, and the sets are not trodden upon or displaced. Where the ridges are split back by a plough, it is usual to destroy small weeds by means of saddle-backed harrows, and subsequently by hand or horse-hoeing, previous to moulding.

PLANTING ON THE FLAT.

Planting on the flat is done in various ways; the chief being spading-in, dibbling-in, and ploughing-in. When dibbling or spading are adopted, the tilth should be a very perfect one, as the operations of planting tend rather to consolidate than lighten the bed. Thorough tillage is therefore highly important, and the tilth should be a dry one. It is necessary to mark out the rows where the potatoes are to be set. In field practice this is best done by means of a steerage implement, such as a drill, although, where there are many planted, it is desirable to have a lighter implement made, such as can be drawn by one horse, as the land is then less trodden. A light frame carried on two

travelling-wheels and fitted with small coulter is all that is necessary. Where land has lain in a tilth for some time, and an opportunity to plough it cannot be found, it is sometimes advantageous to run a horse-hoe up each mark to check thistles and to lighten the land. The space between the rows can be stirred at any time after planting. The best method of spading-in is for a man to proceed along the outside row and scoop out holes for the potatoes to be dropped in at the required spaces. His attendant—a lad or a woman—then follows and drops in the potatoes. Another man follows in the next row and scoops out a fresh set of holes, throwing the earth he takes out on to the potatoes in the front row, the planting of the first row then being complete. This is followed throughout the field, and a man and dropper can plant an acre in a day. Dibbling-in is done similarly; but the holes are made by a stout stake or dibble, and the potatoes are dropped into them, being either covered by the feet of the dibbler, or the earth is raked over them. It is a slow process, with no special advantage over spading-in, though it is preferred by some when sprouted sets are planted.

SHALLOW RIDGE PLANTING.

A modification of the ridge system, which partakes of many of the features of planting on the flat, is that of preparing the tilth as for the flat, but opening up shallow ridges with a multiple moulding-plough. In this case, the furrows are made only deep enough to cover the set. After the potatoes are laid in position the moulders are taken off the frame, and two tines are fixed in the place of each moulder in such a way as to turn the mould back on to the sets. This is a quick way of opening up the ground and of covering in the seed. Attempts to cover in the sets with harrows or rollers are rarely satisfactory.

AFTER-WORK ON THE FLAT.

On the flat system considerably more after-work is generally necessary than where the ridge is adopted. The land should be harrowed both before and after the plants show above ground. Provided the weather is dry, harrowing may be continued until they are 6 or 8 inches high, and I have often done it without harm when they have been considerably higher. Hand-hoeing round the plants is beneficial in all ways; and horse-hoeing between the drills should be done until they are fit to mould up. The chief advantage in the flat system is that there is less work at the time of planting, although there is more to do subsequently, but the work is thus extended over a longer period, which is

inconvenient where many are planted, especially as the potato planting season is a busy one in connection with the sowing of other farm and market-garden crops. Another advantage is that on dry soils in very dry seasons light rains effect more good than when they run off ridges away from the plants; the moulding up being delayed until sufficient moisture is obtained. It is a mistake to mould when the land is very dry and hot. Many instances of injury being done by turning the hot clods about the stems have come under my notice during the past few hot dry years.

PLOUGHING-IN.

Ploughing-in is a system which is chiefly adopted by those who have not much experience of planting, or where the crop is grown with the view of cleaning the land. It is sometimes practised on land that is very foul, the intention being to submit it to a fallowing or partial fallowing before the plants grow sufficiently to prove a hindrance to the working; and after the plants are up to continue the cleaning by working with stirring implements such as the horse-hoe. Where cleaning is a principal object the rows should be set wide apart; and the varieties planted should be vigorous. The digging-breast plough, which takes a specially wide furrow and leaves the soil light, is the best for the purpose. When this plough is used the potatoes can be laid in the furrow in such a way that a much smaller proportion is disturbed by the horses than when a narrower furrow is taken by the ordinary plough. In a narrow horse-walk many are smashed by the horses, and more are kicked out of place. To avoid kicking out of place the horses are sometimes made to walk on the unploughed land, and not in the furrow, but this tends to the consolidation of the soil. As the tubers have to be placed in a deep furrow the planting is slow, because it is necessary to lay each potato in its required position, and this entails stooping low. There is very little to commend the practice, as other systems tend to the production of more potatoes of better quality. In a wet season the fallowing is of very little use, and it can only be recommended on dry soils. Although the surface may be worked up to a loose condition, that portion about the set subsequently becomes trodden down too firm. Where the land is clean and well prepared, one of the other systems on the flat or on the ridge is decidedly preferable.

THE LAZY BED.

The Lazy-bed system should only be practised on wet soils, and except under rare conditions potatoes should not be grown.

on land containing an excess of moisture. The usual method of planting is to prepare the bed by laying it up with a plough or the spade, to place the potatoes on this, and to cover them in with earth taken from the trench. Earth is again laid about the roots from the same source when the plants are well above ground; and generally a final moulding is given from the trench. There are very few places in England where it is advisable to plant in this way. On newly reclaimed bog, where the drainage is not complete, the trenches with a main drain to empty into are useful for carrying off the water; and there are instances where advantage is gained by bringing up the subsoil to mix with the soil.

POTATO-PLANTING MACHINES.

Recent improvements in potato-planting machines will tend to increase their adoption. The trials of these machines, in connection with the Show of the Royal Agricultural Society of England at Leicester, proved that they have reached a stage of practical utility, and that they are time-saving machines. Messrs. Ransome's First Prize Planter opened furrows for the tubers to be placed in, and after laying the potatoes in their proper position covered them in. Two rows were taken by the machine, so that as it passed over the ground the planting of two rows was effected by two horses and a driver. The machine is excellently designed in all its parts, and is a first-rate illustration of what may be done by multiple implements on the land. A companion machine was shown planting three rows at once. Our strong English prejudice is slow in being overcome, but the lighter construction and draught of modern machinery render it possible to do double or treble row work where, until recently, one row was regarded as all that was feasible.

MULTIPLE WORK.

Personally we do the greater part of our potato cultivation on over 200 acres of potatoes by three-row implements. The opening of the furrows, the covering in of the sets, the horse-hoeing, and moulding-up are all done in this way, and we find it the most economical to adopt. The framework carrying the moulders, or hoes, is after the type of the well-known Smith's steerage horse-hoe, made stronger to withstand the greater strain. The hoes employed are of the same type as those used for hoeing root crops; sometimes one large hoe covering the space between the rows is used, and at others two or three smaller ones, according to the nature of the work to be done.

The moulding breasts are made locally from our own patterns, the chief feature being the shortness of the wings, and the small amount of friction on the under side, there being no blade; the wings gradually rise from the ground towards the back, so that unnecessary pressure is avoided. Where short breasts are used it is necessary to make the mould drive a little before the breasts, so that it may thus be driven up to form the ridge.

THE SEED.

The seed or sets are so intimately associated with the planting that, though the intention in this paper is to deal only with the planting, it is well perhaps to touch on a few features. For ordinary purposes, sets about the size of a hen's egg are most suitable, taking all points into consideration. These generally possess sufficient vigour to establish the plant even under trying conditions. It is better, however, except for the matter of price, that the sets should be larger rather than smaller than a hen's egg. Some varieties seem to do as well when cut as when whole; but this is by no means always the case. When sets are cut, it is important to sprinkle them well with quick-lime, so that the cut portion may be cauterised to prevent hasty decay, and also rendered distasteful to insects, as well as to lower forms of life, such as eel-worms. It is wiser, in field cultivation, to leave several eyes in a set, as there are many difficulties for it to combat. But in the garden, where conditions are more favourable, two are sufficient, and, for very valuable varieties which are being developed, one eye may be relied upon.

SPROUTING.

The sets of the earliest varieties, such as Myatt's Ashleaf, Sharpe's Victor, the Early Market Favourite, Puritan, and such as bear the cost of the extra labour involved, are allowed to produce strong shoots before being planted, although sprouting is not absolutely necessary, and is only practised where it is desired to obtain them specially early. Strong growing, early maturing second-early varieties, such as Cole's Favourite, Sutton's Triumph, Beauty of Hebron, Findlay's Challenge, and Windsor Castle, need not be sprouted, as a good crop can be obtained without; late varieties, of course, need not be. The potatoes which are likely to be most sought after this year as main crops are the Up-to-Date, which is remarkably good, the Wonder, which is a specially good cropper and disease-resister, with good cooking properties, and the Farmers' Glory. The latter is the newest and a very strong variety of the Magnum type; it

thus possesses great cropping powers, and is, of course, popular with those who fancy a late Kidney.

Potato cultivation requires very close attention and observation, and without these success cannot be achieved. The preparation of the soil is of first importance; but unless varieties suitable for the soil and likely to be in demand on the markets are selected, good and paying prices cannot be obtained.

V.—*The Métayer System in Tuscany.* By G. E. LLOYD BAKER.

DURING a visit to Florence in October last, just at the end of the grape harvest, I had an opportunity of going over two estates in Tuscany with the owners, both of whom were enthusiastic agriculturists.

The estates were entirely worked upon the Métayer system, and, as ever since the days of Arthur Young, there have not been wanting advocates of the introduction of this system into our own country, it occurred to me that some account of its application might be interesting to English readers.

It has indeed been so successful in those countries in which it prevails that, were it not for the difference of race and customs, landlords in England might hope for an escape from their difficulties by its adoption.

THE MÉTAYER SYSTEM.

Under the Métayer system the landlord provides the farmhouse and buildings, the live stock, and the principal implements, such as ploughs, carts, &c.; also, for the first year only, seeds and manures. As payment, he takes half the crops. The cost of improvements upon the farm is divided between himself and the tenant. Under this arrangement the tenant requires no capital beyond what will suffice to maintain himself and family until the crop is harvested. The farms are of small size, viz., from fifteen to thirty acres. When a farm is vacant applicants for it are always forthcoming, for the Tuscan peasant will not leave his native village so long as he can earn even a bare subsistence in it. A podere, or farm, of eight ettare (19 acres) generally requires about ten persons, men, women, and children, to work it, while very rich land needs even a larger number. The number necessarily varies—in fact, I saw seventeen on one farm of the size named. Extra labour is hired if the family is not sufficiently large to work the farm properly; whereas if there are too many, they are very poor. A family

may include brothers, sisters, and cousins, but there is one head, the Capoccia, who buys and sells and transacts all business, and also takes charge of the money. His wife, or some elderly woman of the family called the Massaja, looks after the house-keeping and the poultry; the clothing and linen being provided out of the proceeds arising from the sale of the latter. The younger members of the family are absolutely dependent on the Capoccia, and are housed, fed, and clothed by him; it is no part of the bargain that they receive any money at all. The men appear as happy and contented as incessant hard work in the open air can make them; but the women are soon aged by constant drudgery. The children, when little, look thin and ill-fed, but they gain in appearance as they grow up. The landlord has absolute power to eject his tenants at short notice.

DIVISION OF PROFITS.

Constant supervision, either by the landlord or his agent, is necessary, in order that the profits may be fairly apportioned. The Tuscan contadino, or peasant, would not openly rob unless very hard pressed; but he thinks nothing of encroaching on his landlord's rights at every opportunity. Thus, while the grapes are ripening, the "family" eat as many as they can before the gathering, when the division takes place. One landowner, who described the Métayer system as one of trust and supervision combined, told me of a very strict German agent who, not understanding the people, tried to enforce absolute honesty. The "family" were indignant at being stopped in their customary pilferings, and consequently did not scruple to rob more extensively in other ways. Deviations, on the part of the "family," from the strict path of honesty, are apt to occur with respect to other crops, such as corn, potatoes, olives, &c. The landlord takes his share of the crops to his own cellar or barn, and makes his wine or threshes and disposes of his corn as may seem best to him. Half the calves and one ham, or one side from each pig that is killed, fall to the landlord's share. The poultry alone are not divided; on some estates they belong wholly to the tenant, on others, a fixed amount, such as two couple of fowls and 100 eggs, are paid yearly to the landlord by the tenant. The number to be kept is strictly limited by the landlord, and a narrow limit it seems, but any large quantity might damage the vines.

CULTIVATION OF THE LAND.

Grapes, wherever it is possible to grow them, seem to be the most profitable crop. The oldest and most picturesque way of

treating the vines is to train them from tree to tree in festoons, the tree being pollarded and the branches trained into a cup shape, over which the vine climbs in large clusters. This is the method generally pursued on the property of the Marchese Pucci at Granaiole on the road between Florence and Siena in the Val d'Elsa. This beautiful property of 2,400 acres, one of the largest in Tuscany, lies in a ring fence, near the banks of the Elsa, where the soil is rich and level and extends up the hills on each side between the picturesque towns of Castel Fiorentino and Castel Nuovo. The villa of the Marchese at Granaiole, with its extensive gardens, overlooks the property. I understood from the agent that he considered that this system of training vines produced more grapes and better wine than when the vines were trained to wires, as the shelter afforded by the trees at some periods of the year was very beneficial. The elm, alluded to by Horace, is not much used for training purposes, as it takes too much out of the ground. White mulberry, the leaves of which are used for feeding silkworms, and pear and apple trees are sometimes used, but the best for the purpose seems to be the maple, the short growth of which gives enough support without taking too much from the land. Every stick from these pollards is valuable to the peasant, as it is his only firing during the short but severe winter.

On the property referred to, the enterprising landlord has erected five wine factories, and all the grapes are brought to a factory and pressed, each podere having its separate receptacle. After it is drawn off into barrels half is given to the tenant. It was interesting to see that some of the experiments here were being carried on upon similar lines to those of the Bath and West and Southern Counties Society at Butleigh with respect to cider. Certainly the wine made here with great care and first-rate appliances was superior to that which I tasted at the peasants' houses. That known as Chianti, which is somewhat like Burgundy, is much the best. The grapes are pressed with the stalks and left for some time in the wine-juice, which is probably what gives a certain roughness to the wine. If the manufacture can be improved (and there is plenty of room for it), the gain to Italy will be enormous. The produce is said to be twice the consumption and could be easily increased, but a great deal is exported at a low price to be manufactured elsewhere into a more popular article.

Ploughing and hauling are done by huge white cattle of the old Tuscan breed, as is shown in the accompanying illustration. These cattle only give sufficient milk for their calves.

Next in importance to the vines come the olives. From



CATTLE OF THE OLD TUSCAN BREED, BELONGING TO THE MARCHESE PUCCI.

one hundred to two hundred olive-trees can be planted on an ettare ($2\frac{1}{2}$ acres), and when these are well grown and intelligently pruned and manured, each should produce from one to two flasks of oil ($2\frac{1}{2}$ litres), of the value of $2\frac{1}{2}$ lire (2s.); but it is only every third year that an olive bears a full crop. Vines may be planted between, and other crops under, the olive-trees. In many cases vines are planted round the edge of a plot, and wheat, rye, or clover in the middle, but potatoes and cabbages are avoided.

Besides wine factories the Marchese has a very large mill on the river for grinding corn, and another in connection with a manufactory of artificial manure.

The land here being level and good, is said to bring a nett rental of about 3*l.* per acre, which is exceedingly high. Good vineyards, indeed, may bring 12*l.* per acre. I heard that a little further north the average value was less than 2*l.* after paying all expenses, including the taxes, which are nominally 48 per cent. The property is usually assessed upon an old valuation, now far below its real value. Land, when sold, is expected to yield 5 per cent. clear.

A very differently situated property is that of the Marchese Alli-Maccarani, near the station of San Romano, on the line from Florence to Leghorn. His farms are small, and much scattered, but most of them are on high ground amongst the hills surrounding his residence at Stibbio. This is an ancient villa of the Medici, which came into his family through an heiress some centuries ago; the well-known arms of the Medici are conspicuous on many parts of the building. Its position affords a glorious view over the hills and valleys of Tuscany. On this estate no pains have been spared by the proprietor to develop the capabilities of the soil to the utmost, but, owing to its size and position, it is impossible to work large factories, as at Granaiolo. The landlord spends the whole summer at his villa. He has no agent; but he is constantly among his tenants, directing even the *minutiæ* of cultivation, and bringing his own untiring energy to bear upon the Tuscan farmer, whose chief characteristic is a placid and inert contentment. Tracts of forest land have been cleared and induced to yield crops of olives and grapes, and farmhouses have been built; with the gratifying result that, whereas twelve years ago a revolver was a necessary accompaniment of a walk, you may now go alone, and unarmed, in perfect safety. The men are fully occupied, and, having work and food, are peaceable and contented. He showed me some old olive-trees, much neglected, producing little fruit and bad oil, reminding me of some of the wretched old apple-trees still lingering in our own orchards. When the

Marchese has found such unprofitable trees on his land, he has had them pruned, grafted, and manured, which has resulted in a much better return of oil, both as regards quality and quantity.

The vines here are trained on wires about three or four feet from the ground. They are planted about one yard apart, and the rows are two yards apart. Each vine, after a growth of three years, should produce half a flask of wine (a quart), which is worth about 3*d.* Those trained to trees take longer to grow, and fewer can be grown; but they produce from ten to twelve quarts each. The vines on this property are planted at some distance apart, and are increased each year by layers.

The ravages of the *Phylloxera* led to the importation of a black American grape—the *Isabella*. The peasants like it for its hardihood; but the landlords generally dislike the flavour of the wine, which has a rich scented taste, something like raspberry jam. The grape when picked and eaten is delicious, its flavour more resembling that of a black Muscat (*Madresfield Court*) than anything else.

Of the arable land one-third is devoted to corn, one-third to clover or some forage crop, and one-third to maize and potatoes.

It is difficult to estimate the distinct value of each crop, but it is considered that the intermediate crops pay for all cost of cultivation, and leave the grapes as nett profit. Assuming this to be correct, quite 20*l.* per acre would remain to be divided between landlord and tenant. Taxes would bring the landlord's share down to 6*l.* Of course it is only on certain land that this will hold good.

There is no meadow land. Sheep are occasionally seen; horses rarely, but the Marchese has introduced some good Berkshire pigs, of which a few are kept on each farm. The clover is cut by the women and carried to the cows and oxen which do all the hauling. Some sheep are tended carefully near the roads, and a small cheese is made from ewe milk. The whey is afterwards boiled and makes an excellent curd called *Ricotta*, which is eaten (by those who can afford it) with ground coffee and sugar. There are a few goats who supply the scanty amount of milk consumed; and some rabbits are kept in hutches; none are seen on the ground.

LANDLORD'S EXPENSES.

The Marchese informed me that to equip a farm of 20 acres 120*l.* was required. This does not include the cost of the buildings, which, by the bye, can be very cheaply erected. I saw a farmhouse, 40 ft. by 26 ft., and 10 ft. high, that cost, including

labour and timber, only 40*l.* It was solidly built of some sort of concrete, and flat bricks or tiles. It came to 1*d.* the cubic foot; only a quarter of the lowest price in England. A wine factory, I was told, would cost at least 1,600*l.*

LIFE OF THE PEASANT.

The houses that I went into, though differing in neatness, were the same in general arrangement. In each there was a moderate-sized kitchen with an open hearth, the furniture including an old-fashioned spinning-wheel, turned by one hand, a large bread pan with drawers under it like a bureau, a loom, generally in use, and perhaps a table and chairs. The spinning-wheel and loom furnish the clothes and linen of the house. Leading out of the kitchen were three or four bedrooms, each apparently used by one family, with little furniture beyond the bed and a few sacred pictures on the walls.

There was no glass in the windows, its place being taken by reed blinds and wooden shutters. Shoes and stockings are rarely worn either in or out of the house.

I was told that the breakfast consists of brown or rye bread and wine, and the supper of bean soup poured over thin slices of bread, and more wine. Besides this some oil is used, which takes the place of butter, and some potatoes. Figs and grapes are added when in season. Groceries seem unknown. Sugar is, speaking generally, too dear to be thought of.

Nominally education is free, but hitherto in this part the men only have been taught to read, the women's education having been altogether neglected. The wages of independent labourers seem to vary from 8*d.* to 1*s.* 3*d.* per day. This is higher than the earnings of a member of a farm family; but, in the latter case, the employment is more continuous and secure. By this system all bargainings and difficulties about rent or reductions are avoided, and a labourer, if he can take a farm, may in time become a capitalist.

The life seems a hard one, but it is passed in the open air, in a beautiful country, possessing, on the whole, a delightful climate. A careful and skilful farmer can now and then get together a moderate capital, and, as he has certainly begun with practically nothing, he must be allowed to have prospered. The family is so much under the control of its head that its members cannot marry without his leave and that of the Massaja; but as the population has a tendency to increase there is apparently not much difficulty in obtaining this consent. This secured, each member achieves his one idea of happiness, that of marrying and settling for life in his native village.

This system has brought into cultivation a large part of France and Italy. As labourers become more prosperous, the standard of living will rise, and the old mode of life will become less possible. It is hardly conceivable that the *Métayer* system should take any firm root in England; but if the time should come, which some economists prophecy, when an increase of population throughout the world will render work scarce and means of living dear, it is possible that this system may be utilised to bring into cultivation some of those lands which are now abandoned as useless.

VI.—*Petty Industries and the Land*. By J. L. GREEN, F.S.S.

TOWARDS the end of the eighteenth, and the beginning of the nineteenth centuries, it became apparent to the Legislature that the petty industries of the nation—carried on in close connection with the cultivation of the soil—were, with disastrous results, being absorbed into the towns. It also became apparent—for reasons not necessary to state here—that the large-farm system had not, during this period any more than in a previous period of our history, achieved the complete success which had been anticipated for it.*

As a consequence, numerous attempts were then, and have since been, made to ameliorate such a condition of things.

I propose to ascertain what these attempts and their results have been; to state what is done abroad in regard to petty industries and the land; and then to offer some suggestions in advocacy of the return to the rural districts of, what may be termed, the system of village industrial employment, which could be there adopted with advantage not only to the individual but to the country as a whole. The subject is one which, it is pleasing to perceive, is gradually obtaining that larger share of attention it unquestionably merits. I have been led to refer to it on the present occasion chiefly from having, at the last exhibition of the Bath and West and Southern Counties Society, observed, in the Arts section, many most creditable exhibits of rural art and handicraft work. This section of the Society's Annual Meeting is one which, in future years, I hope will be enlarged. In the present state of public sentiment on social matters, it seems to me that there could be no more

* See Kalm's 'Visit to England'; also works by J. Thorold Rogers, Sir R. Phillips, John Richard Green, &c.

opportune time than the present in which to direct work of this character into a commercial channel; and one way of assisting to this end, in addition to such suggestions as I shall make later on, is to excite an interest in the work, both on the part of possible competitors and of visitors, at an annual exhibition of a *thoroughly representative description.*

ATTEMPTS AT REFORM AND ALLOTMENTS LEGISLATION.

1st. Let us inquire what the attempts referred to have been.

In 1801 a General Enclosure Act was passed, which had the effect of largely destroying the interests of the peasant classes in the waste and common lands. This was soon apparent. In 1819, therefore, Sturges Bourne's Act was passed, by which churchwardens and overseers were enabled to take, on their own account, parish lands for the purpose of giving the poor employment. In 1831 an Act gave further power to these officials to use the common lands for the poor; also an Act was passed to enclose forest lands of the Crown with a similar object; and in 1832 there was an enactment by which fuel allotments could be used as gardens for the labourers. The next step to be noted is the Report of the Poor Law Commissioners, dated 1834, in which we find the allotment system advocated with emphasis. In the following year Boards of Guardians were given the control of previous Acts.

In 1843 a Select Committee of the House of Commons was appointed to inquire into the allotments question. On reference to the Report of this Committee, we find that in most, if not in all, of the counties more particularly devoted to agriculture, there were a certain number of allotments, but not in the *manufacturing* localities. The Committee declared their opinion distinctly in favour of the allotment system, on the ground that the tenancy of land as garden allotments is "a powerful means of bettering the condition of those classes who depend for a livelihood upon their manual labour"; and that "the system of garden allotments has proved an unmixed good." One of the recommendations made by the Committee was that allotments should in future be provided for by every Enclosure Act.

In 1869 a Committee of the House of Commons made inquiry into the working of the Enclosure Act of 1845. It was found that the Act was not so generally and usefully carried into effect as it might have been, and, therefore, in the Poor Allotments Management Act of 1873, and in the Commons Act of 1876, more stringent measures were adopted with the view of placing allotments from waste land, or under

enclosures, more easily at the disposal of the labourers. In 1778 an Act was passed providing that the labourers should have allotment land on the making of any "regulation" concerning a common, just as they were entitled to land in allotments on the "enclosure" of waste land.

In 1882 a further step was made in the direction of allotment legislation. The Allotments Extension Act was passed, the object of which is to enable the parishioners to have in allotments the charity lands of their parish or parishes, except where such lands, or the incomes therefrom, are used for (1) apprenticeship, (b) ecclesiastical, or (c) educational purposes. The Act is compulsory in its operation, and has been of great benefit, although trustees of charity lands are even now often ignorant of its provisions, and, sometimes, even when they know them, try to evade them.

In 1885 a Committee of the House of Commons, appointed to inquire into the housing of the working classes, reported most emphatically in favour of providing additional facilities or procuring allotments for the rural labourers. Several witnesses from agricultural localities gave testimony showing that the "cultivation of a plot of land attached to the dwelling was, from every point of view, of the greatest advantage to the labouring classes in the country."

A MEASURE INVOLVING A NEW PRINCIPLE.

The Allotments Act was passed in the year 1887. It was the first Act which admitted the principle of the compulsory acquisition of land for allotment purposes (if we except the Act of 1882, which, as we have seen, deals only with charity lands). The administration of the Act was placed in the hands of the Sanitary Authority (now the District Council), which in boroughs was the Town Council, and in rural districts usually the Board of Guardians. Any six Parliamentary electors or ratepayers in a district can require the authority to inquire into the supply of labourers' allotments in their district or parish, and it then becomes obligatory on the local authority to cause an "inquiry" to be made. If the authority is satisfied that there is a demand for allotments, it is their duty to inquire and ascertain if suitable land can be obtained for the purpose by voluntary arrangement at a reasonable rent, and on reasonable conditions. But if they find it cannot be so obtained, then they are empowered to purchase or hire any suitable land which may be available either within or without their parish or district, and to let such land in allotments not exceeding one acre, to persons (men or women)

belonging to the "labouring population" resident in the parish or district. If suitable land in sufficient quantity cannot be purchased or hired by voluntary arrangement, the local authority may petition the County Council, and the County Council, after due inquiry, may make a provisional order compelling owners to sell land for the purpose of allotments.

In 1890 another Allotments Act was passed, the object of which was to provide an appeal, by the applicants for allotments, to the County Council in cases where the Sanitary Authority (other than that of a borough), under the Act of 1887, failed to acquire land adequate and suitable in quality and position for the provision of a sufficient number of allotments for the applicants for the same.

SMALL HOLDINGS.

In February, 1892, the Government of the day announced in the Queen's Speech their intention of submitting, for the consideration of Parliament, "a measure for increasing the number of small holdings of land in agricultural districts in Great Britain." A Bill with this object in view was brought in by Mr. Chaplin on the 22nd day of February, 1892, passed both Houses of Parliament, and came into operation on the first day of October in that year.

The main provisions of this important Act are the following:—

(a.) Any one or more county electors may present a petition to the County Council of their own county, stating that there is a demand for small holdings in the county. This petition is then referred to the Committee of the Council, of which the local Councillor is a member, and, if the Committee are satisfied that the petition is presented in good faith and on reasonable grounds, they must forthwith hold an inquiry. If the Council are satisfied that the demand is genuine, it is their duty to acquire suitable land for the purpose of providing small holdings for persons who desire them, and who will themselves cultivate them.

(b.) Every person who purchases a small holding is required to pay down one-fifth of the purchase money, and the balance in half-yearly payments during a term of not more than fifty years. If the Council think fit, a portion not exceeding one-fourth of the purchase money may remain unpaid, and be secured by a perpetual rent-charge upon the holding.

(c.) In the case of persons who cannot pay down one-fifth of the purchase money, the County Council have power to let small holdings, either up to 15 acres each, or, if exceeding 15 acres, then up to 15% annual value.

(d.) The Act also deals with present tenants of the small olding class, or those who already rent small farms. The County Council may advance four-fifths of the purchase money to such persons to enable them to purchase their present holdings from their landlords.

(e.) Every small holding must be cultivated by the occupying owner.

(f.) The Council are also empowered to let land to several persons on the co-operative principle.

The Act holds out the hope to the thrifty working man of becoming a cultivating owner. It is a measure which will only be slowly utilised, as there are but few labouring or other working men in a rural parish who can yet comply with the second provision, inasmuch as they have not the means of paying down the fifth of the purchase money. Moreover, it can hardly be expected that more than, say, half-a-dozen persons in any ordinary rural village will petition the Council to put the Act into operation. Nor in many villages would it be desirable, at present at any rate, to exceed this number; for whilst I strongly believe in the small holdings system, I still quite as strongly believe in the desirability of having large farms, providing the occupants of them have sufficient capital to properly cultivate and manage them. It is to the large farmers and owners that we must in the future (as in the past) chiefly look for the improvement of our farm live stock, as well as for improved methods of farming arising from experiments and the employment of the latest agricultural inventions. This Act—unlike the Allotment Acts, 1882, 1887, and 1890—does not contain any compulsory provisions. It was deemed wiser* in new legislation of the sort, where public money was to be lent for such a social purpose, and where larger areas of land were to be dealt with than was contemplated in the Allotment Acts, to proceed with considerable caution.

The advantage of small holdings in suitable districts (holdings of, say, from 15 to 50 acres—as contemplated in the Small Holdings Act) has been so generally admitted by competent authorities, that I do not feel called upon here to argue the point—indeed, it is beside our present object.

THE LATEST MEASURE, ALSO INVOLVING A FURTHER NEW PRINCIPLE.

One other measure claims attention, and that is the Local Government Act of 1894. By this, the system under which the rural working classes previously obtained allotments has been

* See Hansard's Debates, 1892.

materially modified. The Parish and District Councils created under the Act have certain powers to which it is desirable to refer. Parish Councils may "represent" to the District Council (hitherto the Sanitary Authority) that there is a demand for allotments, *i.e.* they may exercise the power previously possessed by any six ratepayers or parliamentary electors under the Allotments Act, 1887. If the allotments cannot be obtained, they may make a further representation to the County Council. The Council may then make an Order that the land is to be taken compulsorily. If they refuse to do so, a "representation" may be sent to the Local Government Board, and *that* Board may make the Order. If the Board makes an Order overruling any decision of the County Council, it is to be laid before Parliament by the Board. A copy of any Order made, either by a County Council or by the Local Government Board, has to be served on the parties interested, together with a statement that the Order will have the full force of an Act of Parliament, unless within a given time a memorial by an interested party is presented to the Local Government Board praying that the Order *shall not* become law without further inquiry. Any Order made by a County Council is to be deposited with the Local Government Board, and, if no such memorial has been sent as above-mentioned, the Board is to confirm it. If such a memorial *has* been sent, the Local Government Board is to hold a local inquiry into the circumstances, and is either to confirm, with or without amendment, or to disallow, the Order. The Order of the Board is to be final, and have the full force of an Act of Parliament. A Parish Council cannot *purchase* land for allotment purposes. A Parish Council may, however, *hire* land for allotment purposes. If they cannot do it by voluntary arrangement, they may do it compulsorily, after obtaining an Order from the Local Government Board to that effect. Such Order—"as respects confirmation and otherwise"—is to be subject to exactly the same provisions as if it were an Order made by the County Council to *purchase* land as above described.

The power to *compulsorily hire* land for allotments is a further principle new to the legislation on this subject, and, by the Act of 1894, the District Councils, as already stated, take the place of the Sanitary Authorities under the Acts of 1887 and 1890.

THE VARIOUS ENACTMENTS AND THE RESULT.

The various legislative efforts above referred to, which, in an inquiry of this sort, it is necessary to place on record, whilst they have been of value in securing to thousands of the agricul-

ral labourers *small plots of land* which have added to the comfort of themselves and their families, have neither resulted in raising any number of them to a higher position in life (the legitimate reward of all honest toil), nor assisted to secure for the general body of agricultural workers such a share in the industrial productions of the country as was formerly theirs. Now this, in a well-balanced economy, they ought, I suggest, to possess; it is, at any rate, to a great extent, possessed to-day by the rural workers of Continental countries and is highly advantageous to them.

WHAT WE SEE ABROAD.

2nd.* In considering the second branch of the subject, let us cast a brief glance at the Continent to see what is going on there in the way of petty industries and the land. I have often done so before, with the view of urging that we might in some measure follow the example there set to us.

Beginning with France, I find that we receive from that country most of our toilet articles, such as hair-brushes, tooth-brushes, and combs; and these are mostly made in the rural districts. France supplies the whole world with tooth-brushes. Muslin manufacture all round Taare is largely a rural industry. In Normandy and the Nord, cotton velvets and plain cottons are woven to a great extent in the villages. The silk trade is also still largely a domestic industry, as also are the cutlery, the netting, the jewellery, and the turnery trades.

In Switzerland, agriculture and industry are very closely connected. Watchmaking, except at Geneva, is mostly carried on as a domestic industry. In the Jura, parts of the watch are fabricated in nearly every house by some member or members of the family, which family, during the harvest time alone, is to its full number busy in the fields. Silk weaving in Zurich, Aargau, and other cantons, is carried on by means of the expensive looms and materials which are lent to the peasants by the manufacturers; the same is the case with the machine-made embroidery in canton St. Gall. Here, however, as in Appenzell, there flourishes the trade of hand-made embroidery. Straw and horse-hair plaiting for hats is also much in vogue in Lucerne, Aargau, and other cantons.

In Italy, the rural people in such parts—and they are numerous—as the mulberry-tree can be cultivated engage in silk-

* I am indebted to my friend, M. Pierre Arminjon, of the Savoie, for certain data in this section; as also to Mr. Karl Blind, who kindly undertook to assist me in my inquiries. I have also quoted official details gathered from the voluminous Reports of the Royal Commission on Labour.

worm culture, consequently there is a great deal of spinning and weaving carried on as domestic industries, straw-plaiting also being practised. Italy, however, like Spain, is not *remarkable* for its rural employments, apart from agriculture, which is the chief occupation of the people. Nevertheless, it is quite true that a large part of the industrial workers are still more or less closely connected with the land.

Germany is very famous for its petty industries. The Black Forest clocks, known all over the world, are almost entirely a rural domestic industry. The dwellers in the Thuringian Forest supply us with "Noah's Arks" (familiar to every child), and with numerous other toys. Wood-carving is also largely carried on, and many other petty occupations; in fact, if we take the *whole* of the small workshops of Germany, it appears that over 90 per cent. of the industrial establishments give employment to less than five persons, whilst in thousands of cases the small industrial manufactures go hand in hand with agriculture.

In Holland, the industrial districts, if we exclude Amsterdam and two or three other towns, partake largely of an agricultural character. For example, factory hands build their own houses, and they cultivate their fields or gardens during their hours of leisure. Some industries in particular, such as the linen trade, bring agricultural work into close contact with manufacturing industries, the employes frequently passing from the field to the factory. In spite of the recent development of large industries, the great mass of the people are still employed in small factories, in home industries, or in workshops where the employer works by the side of his men.

As regards Hungary, it is sufficient to observe that the petty industries play as yet by far the most important part in the strictly industrial life of this agricultural country.

In Belgium, one of the most important industries is glass-making, for which a number of works are established in the provinces of Hainault, Namur, and Liège, but principally in the district of Charleroi. In spite of its important development in recent years, the country has preserved very many of its small industries. As a general rule, the glass workers instruct their own children in the various processes, which are thus handed down from father to son. The cotton, flax, and linen industries are principally centralised around Ghent, as domestic trades.

In Austria, the petty industries are generally carried on, both for home consumption and for export, in the agricultural districts. The country may be divided into seven districts, comprising Styria, Carinthia, and Carniola, Upper Austria and Salz-

ing, the Tyrol, Bohemia, Moravia, Galicia, and Bukowina, in which the domestic trades of different kinds prevail. In Styria, as well as hand-spinning and weaving, such petty industries as basket-making and the making of hay-forks, rakes, scythe handles, wooden pipes, brooms, washing-tubs, barrel hoops, and other similar articles, are largely carried on. In Carinthia, ironery is a very common employment. In Carniola, where the manufacture of linen and woollen goods has somewhat declined as a domestic industry, the rural population still make brushes, combs, spoons, tin goods, carpets, rugs, horse-hair sieves, &c., reaping a fair profit therefrom; whilst the manufacture of willow lace, so far from having declined on account of the increase of factories, has actually increased considerably during the past two decades, chiefly owing to the establishment of a school where the art could be encouraged and new designs made. In Upper Austria and Salzburg, wood-carving and turning are highly flourishing occupations, the articles made comprising household utensils, spoons, goods made of split wood, toys, &c. Large numbers find employment in lacquering and painting the spoons after they have left the turners' lathes. In the Tyrol, the most important petty industries are connected with household utensils, playthings, ecclesiastical fittings, carved figures, lace work, weaving, felt hats, shoes, horn spoons, pipes, and silver filigree work. In Bohemia, the glass industry is a speciality, and various branches of this trade, such as painting on glass and glass polishing, are carried on by the workers at home. The wood industry is also important, and basket-making, and spinning and weaving occupy the time of a large section of the population. In Moravia, a considerable number of persons are employed in the cutlery trade, in textile industries, in knitting, netting, embroidery work, the manufacture of children's toys, baskets, and articles of domestic utility. In Galicia, many of the villages produce or manufacture practically all the goods they require, as was formerly the case in England. The chief petty trades are weaving, spinning, tanning, wood-carving, and straw-plaiting, and the manufacture of earthenware and metal goods. The women occupy themselves with embroidery, lace-making, and bead work. These observations apply generally to Bukowina as well as to Galicia.

Bosnia and Herzegovina are extremely interesting as showing what a people may do by resolute effort. After the Austro-Hungarian occupation brought these countries into commercial connection with the Austrian Empire, the markets began to be flooded with cheap modern goods, and it was feared that the local industries would thus be swept off their feet. The Bosnian local authorities, however, took the matter up, and

encouraged the producers to use good materials, to supply articles of first-class design, and also to meet the needs, whatever they might be, of the public. The result is that the rural people are now, to use a colloquial expression, on their legs again. Inlaying work has been brought to great perfection in Bosnia, whilst the peasants have long been accustomed to manufacture linen, sacking, and the various materials used for clothing. The women make carpets and dye them with colours which they have themselves extracted from the plants—just as the crofters and cottiers of the Highlands of Scotland still do. Engraving on metal, and wrought work in gold, silver, or copper, with the gilding of metals, are also carried on in Bosnia and Herzegovina as rural domestic trades.

In Servia, the petty industries flourish greatly, in spite of efforts to establish larger manufacturing concerns. Almost everything in the shape of clothes, utensils, &c., that is required by country people (who form, it is said, nine-tenths of the entire population), is manufactured on the spot.

Russia, in particular, affords a standing example of the importance attached by the people to village industries. In Russia, cotton manufacture as a home or petty industry dates from the sixteenth century. The leather trade is one of the oldest and most important industries, and is carried on in all parts of European Russia, including Poland and Finland, and in some parts of Siberia. Tanning, fur-dressing, leather-dressing, and the manufacture of boots and shoes, gloves, harness, and other leather articles, are conducted on a very large scale as domestic industries. In fact, the production of the village workshops exceeds that of the factories by nearly 40 per cent., and this in a country where the means of transport (whether for the home or foreign markets—and a large export trade is carried on), are enormously greater than in England. The village trade has, speaking generally, not been affected by the large factories, and various measures have been taken both by the Government and by private institutions to maintain and develop the leather trade in particular, and the industries connected with it. Pottery, again, is chiefly a home industry. In the Gijelsk district (in the Government of Moscow), and in the south, it is still extensively carried on, in spite of the establishment of large factories in different parts of the Empire. In the metal trades, many thousands of the rural classes find work either in their own homes or in village workshops. A large number work as blacksmiths and locksmiths: others manufacture nails, but in this case machine-wire nails have generally superseded hand-made nails. Others, moreover, as in the village of Pavlovo, manufacture cutlery. Fish-hooks,

irns, harness fittings, etc., are also made by the rural
ies.

Working in wood has always been an important industry in
sia. Nearly all the houses, furniture, household utensils,
buildings, etc., are made from wood, and mainly in the
ge workshops with which the country is studded. In almost
y Government village workers are engaged in manufacturing
mon household articles of wood, and, in most cases, the
rent establishments make a speciality of certain articles.
the inhabitants of each village generally manufacture the
e article, and, in some cases, various portions of the same
le are made in different villages. Prince Krapotkin says *

in Russia these industries spring up and develop in those
ons where factories are also extending themselves the most
dly.

AS TO ENGLAND.

rd. I now come to the third and most important point.

It is suggested, without hesitation, that industrial work could,
should, be carried on in the villages side by side with agri-
cultural labour as in former times, and as it is now upon the
continent. It must not, however, be supposed that village
ustrial work need be confined to the labourer or peasant
workers of whom, so far as the first part of this article is con-
cerned, I have chiefly spoken. Many thousands of tenant
farmers should share therein. There is nothing menial or
degraded about it, and of course it does not necessarily follow
that the farmer himself should be an actual worker; so long,
however, as he knows what is really required and sees that the
requirements are met. It is simply a returning to a former
state of things. Nor must it be supposed, when I speak of
village industrial work," that reference is alone made to
manual employments. I would have steam and other power
employed wherever it can be profitably utilised.

But let us consider this third branch of the subject a little
more closely. It will not be denied that agriculture is, gene-
rally speaking, in a bad way; though it is no part of the
present inquiry to ascertain to what causes this may be due.
; again, will it be denied that agricultural districts have
suffered the loss of thousands of their best workers in conse-
quence of (a) the immigration of such workers to more populous
districts; and (b) emigration. The concentration of labourers in
districts seriously upsets the social and economic equilibrium;†

Nineteenth Century, 1888.

See evidence before (1) Royal Commission on Labour; (2) House of Lords
Committee on Poor Law Reform, &c.

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whilst the loss to the country through those who emigrate cannot be regarded otherwise than as deplorable. No nation can contemplate without serious misgivings the departure from its shores of its best sons, while the inferior remain at home. In this condition of things, the Trade and Navigation Returns show that, month by month and year by year, there is an increasing volume of goods imported (apart from farm and garden commodities) which ought to be, and *could* be, produced in our own country. These goods are very largely manufactured by the foreign farmer and peasant.

THE INDUSTRIAL VILLAGE.

The chief argument against rural industrial work is that the manufactured products could not compete on equal terms, and, therefore, successfully, with those of the towns. I have on more than one occasion shown that this is incorrect.* But let me give an example in point. The population of one of the most rural villages of the Eastern Counties was, in 1881, 3685, and in 1891, 4587. The increase has been brought about by the establishment of village industrial work—work which holds its own in the face of the keenest competition. Some forty years ago it was as quiet, dull, and unprogressive a village as any in the land. Now there are sufficient tradespeople to supply the common and daily wants of the locality, and public buildings have been erected to meet the secular and religious needs of the inhabitants. This great transformation has not been due to philanthropy, but to a Mr. G—— and his sons, who, for commercial purposes, started a local manufacturing concern which has given the people constant work. The founders of the firm started by weaving drabbets (a rather coarse linen material), and established a prosperous business in their manufacture. Then they added the business of manufacturing clothiers, and afterwards started mat and matting making, and a department for the manufacture of horse-hair material. The whole concern is now a large and thriving one, employing a large number of hands both in the factory and in the neighbouring villages.

In another village, which is practically unknown outside its borders, and whose inhabitants number some 200, dye works have been started, and the Member of Parliament for the division supplies me with the following account with respect to them:—"It was from no choice of surroundings that Mr. H—— established himself in the locality; it was simply as the early

* 'Rural Industries of England' (E. Marlborough & Co.), &c.

ne of his delicate wife that he chose that spot. Approaching the village over the hills, one catches sight of a low red-tiled building exhaling smoke and steam, and resounding with the clatter of machinery. Perhaps ninety-nine visitors out of a hundred would be wholly unfamiliar with the industry here pursued, which is that of supplying pigments for the colouring of india-rubber goods. Mr. H—— is a Surrey man, whose father was a colour-maker in connection with silk handkerchiefs and sleeve-covers, which were then made by hand. Changes in fashions and in methods of production in time ruined that industry, and then the son, who, in all that pertains to dyeing, was a thoroughly practical chemist, introduced various pigments to the rubber manufacturers. Every one knows how rapidly the use of rubber has grown within recent years. The colouring material is not employed for merely ornamental purposes, as might be supposed; for, without a surface dressing of some description, the use of rubber, particularly for surgical purposes, would be quite impracticable. Mr. H—— does not himself supply the colouring; all that he does is to make the colouring matter—a work of quite sufficient delicacy and complexity, as a glance round the workshops will show. There are butts and vats containing curious-looking compounds, which give off odours such as none but a man of chemical instincts could endure. The workmen in their dress and persons are distinctly men of colour. Huge millstones are pounding the rough material. The man of unpractical mind would never conceive that such a labyrinth of mysterious processes was needed to produce those barrels of dainty-hued powders which constitute the finished product. The antimony, which is received at the works in blue-black lumps, has first of all to be ground and put into solution. Then, according to the colour that is wanted, it is treated with acid, being precipitated by means of weak sulphuric acid. The factory represents a *bonâ fide* village industry. It is a remarkable circumstance that absolutely no skilled labour is employed: the workmen all belong to the neighbourhood; and they have no instruction beyond that which they receive from their employer, who watches them easily. Mr. H—— has received a few tempting offers from speculators with an eye for a going concern.”

These two illustrations will serve to show that the argument deduced to is, to say the least, not always applicable.

A very large portion, however, of the imports from the Continent are made not in the *factory*, but in the homes of the village workers. And here is a large field of labour waiting to be filled in this country. The possibility of its occupation will be shown by what has already been done in this direction in

a Somersetshire village, and also, I am glad to add, in other equally rural parts. In the village in question, home industry has been planted with every prospect of continued usefulness. This has been solely due to the efforts of the rector and his wife. The rector came from Westmoreland, and he had considerable experience of several branches of the art which has flourished in the Lake District for the last 100 years. He was vice-president of the Windermere industry, and it was but natural, finding room for such an effort, that on taking up his present pastoral work in the West of England, he should seek to make known its benefits among new neighbours. Both the rector and his wife are singularly qualified by their skill in decorative work of various kinds. Brass and copper repoussé work, wood-carving, embossed leather, spinning, handloom weaving of silk and flax, Grace-making, and embroidery on hand-woven linen, and other kinds of artistic needlework, are comprised in the programme, in which, between them, they are expert exponents. A beginning was made by classes being started in a small iron room in the village. Metal work and wood-carving were taught by the rector, and spinning and needlework by his wife. Instruction in metal work has taken a leading place in the first of the divisions, for it enables the artificer to place upon the market sooner than a novice at wood-carving could do, by his unaided exertions, an article which will meet with public approval and be saleable. The repoussé work takes many forms. Tripods, candlesticks, sconces, finger plates for doors, bellows, key-racks, brush backs, crumb-trays and scoops, alms dishes, and collecting basins for church use, are all eminently suitable for such treatment, and, with the rector as their guide, the pupils, mostly young men of the village—produced, in but a few months, work of a quality which one could scarcely have thought possible.

Evidences of the success following the rector's instructions are not confined to the creditable display of articles made by his class. At an Exhibition of Home Arts and Industries, some miles from the village, one of his pupils, not very long since, took a first prize, the winner being a young fellow to whom village life was given a new interest by something outside its ordinary associations. Boys of eight are numbered amongst the youngest of the learners, and the work of a lad of ten was represented in the rector's collection by a cleverly made finger plate. The beautifully executed alms dish, used in the church, is an example of the rector's own skill, and against professional workers it secured a prize at a public competition. Little difficulty has been found so far, in disposing of the brass and copper articles produced.

What has been done in this Somersetshire village by the aid of boys and girls, has been accomplished elsewhere in rural districts by older pupils.* This shows that, side by side with many agricultural avocations, it is possible to start and establish work of an interesting, an educational, and a profitable character.

CONCLUSION.—HOW TO ASSIST THE MOVEMENT.

It is unnecessary to argue further that such industrial work can be profitably carried on. I will now offer a few brief suggestions with a view of showing how the system can be brought into operation on a larger scale.

In the first place, I will refer to the County Councils. The gentlemen composing these bodies have most disinterestedly, and with excellent results, taken up the very considerable task of conducting the affairs connected with the local government of their respective counties, and one of the subjects which has occupied no small share of their attention during the past few years has been the question of Technical Education. Good work has, on the whole, been done by the Technical Education Committees; and, in the face of this, it may be thought almost superfluous to offer any suggestions for its improvement. However, the supply of instruction, such as would enable agricultural workers to compete in village industrial employments with the workers abroad, has been, on the whole, deficient. I suggest, therefore, that more attention should be devoted to pottery, wood-carving, leather work, embossing, repoussé work, pottery work (where there is suitable clay), designing, and iron work, fret work, turning, and numerous other subjects which readily suggest themselves. The instruction hitherto obtainable has been chiefly of the kind desirable for improving the existing occupations of the agricultural workers; little practical effort having been made to supply knowledge which would either add to the existing industrial work of the locality, or which would assist in starting any such useful work.

In the second place, the education of the children in the elementary schools should also be more practical from the start. I am certain that there is too much book-learning and too little practical work, an observation which applies with peculiar force to the education of the village child. To begin early in the matter of suitable education is, in my opinion, almost half the battle in providing that "capital" which every child in these

By Mr. Albert Fleming, for instance, in Westmoreland, whose success has been extraordinary, and who has given me an excellent account of it.

days has a right to expect from its public guardians, in order to enable it to compete with any prospect of success in after life. I know that certain doctrinaire educationalists will object to a suggestion of this sort, but I have, nevertheless, a strong belief in its value.

Thirdly.—I urge, and very strongly, that the Livery Companies of London—bodies which in several cases have enormous sums at their disposal—might do more than at present to justify their connection with the various trades and handicrafts whose names they bear. Some four or five years ago, I made an inquiry of each Company to ascertain what their connection then was with the various trades and handicrafts, but I found that scarcely a dozen out of some seventy had any connection whatever with them. The Goldsmiths' Company, the Ironmongers' Company, the Mercers' Company, and a few others, do much admirable work with the funds at their disposal, but even these, as well as a good many of the remainder, might encourage the re-establishment of village industrial communities, especially when we remember that formerly there was a guild or Company of some sort in almost every hamlet throughout the land, and several in every town. In the Middle Ages there were no less than 40,000 guilds in provincial England. To-day, I suppose there are not a score. The Companies in question might, on a large scale, give prizes for local handicraft work; might support, or assist in supporting, a large number of local teachers; might print and circulate gratuitously educational works; and might themselves initiate local and other exhibitions at which prizes should be awarded.

Fourthly.—Attention should be given to producing, in the first instance, those articles for which there is more especially a local demand; thus working as it were from the centre outwards.

Fifthly.—Each county, or group of counties, might in course of time, by means of an association, or associations (these having men of local influence at the head as patrons) be organised for the collection and distribution or sale of the local productions; and for this purpose there should at least be a central dépôt in each county town. A measure of co-operation would thus be brought about, the results of which can scarcely be over-estimated. I may here mention that this is in a way, being already done in the Highlands (where the difficulties are greater), with very considerable benefit to the Crofters and fisher-folk. In place of an organised scheme of the character urged, the local productions of several handicraft classes are, I am glad to learn, already being sent (by those responsible for the classes) to retail or wholesale salesmen

tain large centres of population. So long as such an arrangement answers well, I do not know that it need be disturbed.

Sixthly.—Greater facilities than now exist should be given to those who—living in the towns and capable of cultivating the soil—would be willing to return to it. There are thousands of such persons. For this purpose, the Small Holdings Act should be amended. At present it is well nigh impossible for a townsman, however skilful he knows himself to be in the cultivation of the land, to return to it. Landowners, moreover, must have facilities, by means of State loans, to enable them to erect suitable farm-buildings and cottages for the small holders.

Lastly.—There are many manufacturers in the towns who, I am sure, could advantageously take a leaf out of the book of the London manufacturer who, in consequence of high rates, rates, rents, &c., considered the possibility of carrying on some, at least, of his operations in the country districts; and so some time ago wrote as follows on the experiment he had tried:—"Within the last ten years there has been a decided reaction from the previous tendency to concentrate all manufactures in the centres of trade. I consider the following among the principal causes of this change: Firstly, land for building cottages and for housing the artisans is far more readily obtainable in the country. Secondly, the expenses in large towns have greatly increased, *e.g.* I am now paying 400*l.* per year for water in London by meter, while twenty years ago I paid the same quantity for 25*l.* per year; rates and taxes and rents have also much increased. Thirdly, owing to the impoverishment of the agricultural interest, local labour is relatively cheaper than it used to be, and can be more regularly depended upon. As regards my business generally, I have, for the foregoing reasons, greatly increased of late the amount of labour I employ in the country, although we are heavily lighted by cost of carriage to the amount of some 800*l.* per year."

This gentleman, I understand, has one business in London and another in Surrey; yet he finds that in spite of the extra cost he has to pay for the transit of his goods by rail, his balance-sheet at the end of the year shows a better result than if he had conducted the whole of his operations in the Metropolis. Does it not seem anomalous that we should have to go to London or some other big town for jam, the fruit for the manufacture of which has to be grown in the country? The same question applies with almost equal force to several other commodities. The answer which one receives on pointing out anomalies of this sort is, that a large centre affords, to the man who wishes to buy a particular article, greater facilities—

with a consequent saving of expense—than a village or small town. The advantage, it is assumed, arises from the fact that the buyer can call on, perhaps, several wholesale people in one day, whereas if the same people were located in different country districts he might have to make several journeys, or, at the least, have to conduct an unwelcome amount of correspondence. This objection has, as may have been seen from the statements in this article, probably more of a theoretical than a practical basis; and a proper appreciation, on the part of manufacturers and the public at large, of the benefits which everywhere accrue from a judicious creation of village industrial employments, in more or less close connection with agricultural operations, would finally dispose of it.

VII.—*Dairying in New Zealand*. By A. F. SOMERVILLE.

THE marked difference between dairying in the Colony of New Zealand and in Great Britain lies in the fact, that while in the former country it is the exception for the producers of the raw material—milk—to manufacture either cheese or butter from it, that being left to the factory, in this country the manufacture of butter and cheese is conducted by the dairy farmer on his own premises instead of in a factory.

ADVANTAGES OF THE COLONIAL SYSTEM.

The Colonial system has several advantages. In the first place it permits of the farmer giving his whole attention to the production of the greatest quantity of milk of the richest quality at the least cost. The payment for it on a scale depending upon the amount of butter-fat contained in the milk also induces the farmer both to breed the most productive animal and to grow such fodder for his cows as will give the best results. Secondly, it allows of the production of a larger quantity of butter and cheese of uniform quality at far less cost than if individual farmers had produced it. And thirdly, it provides for the introduction of skilled managers to supervise the factories, thereby ensuring uniformly good results. Besides this, there is the general supervision of the dairy industry by the Government which tends to maintain a high standard of efficiency in the manufacture of dairy products, and prevents any attempt to adulterate such products.

Having spent five months in the Colony, from December,

1895, to May, 1896, I propose to give a "bird's-eye view" of the condition of the dairy industry there as derived from a personal inspection of some fourteen or fifteen butter and cheese factories, and from information supplied to me by Mr. Ritchie, the Secretary of Agriculture, by the Government Dairy Instructors and Managers of Dairy Factories, and especially by the Government Chief Dairy Commissioner, Mr. McEwan, a gentleman of whose grasp of the subject, practical knowledge, courtesy, and willingness to impart information, I cannot speak too highly.

BREEDS OF CATTLE.

I am unable to give even an approximate number of dairy cows of each breed kept in the Colony, there being no statistics available; but of the 257,140 head of cattle kept for dairy purposes stated by the New Zealand Official Year-book, 1895, to be in the Colony, by far the largest number were of the Ayrshire breed. I can only recollect being shown one herd of pure bred Shorthorns; that was a very fine one belonging to Mr. Kirkland, who occupies a farm near Dunedin. Here and there Jerseys are found; but, with the exception of some herds near Cambridge in the Waikato, in the neighbourhood of large butter factories, I heard of and saw but few others, which seems to show that this breed of cow is not universally popular. The reason for this is, the considerable demand for cattle for other purposes than dairying; so, until a better price can be obtained for butter, a "general purposes" cow is found on the whole more profitable. By a "general purposes" cow I mean one which, after being culled from a dairy, can be used for meat and for the special purpose in the Colony of "breaking in" "bush" land for grazing purposes. One or two small farmers who kept Jerseys near towns told me that butter made from the milk of Jersey cattle was firmer, and commanded a better price than that made in the same neighbourhood from other breeds of cows. In some localities a good many Holsteins are kept and crossed with the Ayrshire, and where the farmer does not pay sufficient regard to the quality of his milk, a variety of cross-bred cows may be found.

The factories being open for from eight to nine months the cows, as a rule, are kept in milk for that period, but in some districts the milking season only extends over six months. I need hardly add that the dairy industry does not flourish where the cow is bringing in nothing except a calf for half the year.

BUTTER-FAT.

What especially strikes one, however, is the very large amount of butter-fat obtainable from dairy cows, both in New Zealand and the Colonies of Victoria and New South Wales, even from breeds and crosses which in this country have by experience been found to be deficient in butter-fat-producing qualities. In many factories 3·8 per cent. butter-fat is the adopted standard, and in very few does it go below 3·6 per cent. At the Stratford Dairy Factory, which is worked for ten months in the year, and during last January was making an average of 1500 lbs. of butter a day, the average fat in the milk for the year had been as near as possible 4 per cent., and for May, 1895, 4·3 per cent.

At the celebrated Edendale Cheese Factory, in a supply of 101,409 lbs. of milk delivered to the factory between June 19 and July 18, 1895, the average fat was 4·63 per cent., the lowest being 3·26 per cent., and the highest 5·42 per cent. I have mentioned these two factories because in both the milk is carefully tested by the Babcock Tester, and the results given above were worked out by the Government Dairy Commissioner, while a dairy school was being held for a month at each place. Though the breed of cows is very much the same—Ayrshire and cross-bred Ayrshire—in the districts supplying each factory, the climate and character of the soil differ considerably. Stratford, which is on the west coast of the North Island, has a mild damp climate; Edendale lies about 700 miles to the south, with a climate like the South of Scotland. Stratford is in the centre of bush land recently cleared, and as but little of the land is “stump,” ploughing is almost out of the question, and the only fodder is grass. Edendale is the centre of a fine flat agricultural country, roots and oats being grown for winter feeding. In neither district, so far as I could learn, was any artificial feeding-stuff, such as cake, supplied to the cows.

At the Central Butter Factory at Christchurch, which is half way between Edendale and Stratford, there was from 3·6 to 3·8 per cent. of butter-fat in the milk supplied last January, and the factory turned out 2,800 lbs. of butter a day.

I have before me the returns of the test of the milk supplied to the Cheltenham Factory, which also is on the west coast of the North Island: the milk in February gave 4 per cent.; March, 4·27 per cent.; and April, 4·4 per cent. of butter-fat. This is another bush district; the cows are cross-bred Ayrshire and Shorthorn.

Not far from this place I saw a small herd of Jerseys, two of which had, during two months of the last summer, averaged 17 lbs.

of butter per week each, and I have authentic proof of a cow yielding as much as 23 lbs. of butter per week for a month after calving; this cow was curiously enough a cross-bred Shorthorn. Many other cases could be quoted of high percentages of butter-fat. One gentleman, who keeps a nice little herd of Jerseys, and supplies a factory, wrote to me: "I have had individual tests as high as 6·5 per cent., and many between that and 5 per cent.; my average for the last twelve months would be about 4·25 per cent. This, as well as the quantity, I hope to improve by careful breeding." In the same letter he says, "green oats and a feed of hay given in the shed constitute the winter feed." The conclusion which, I think, one may draw, is that, partly owing to care in keeping cows whose milk is naturally rich in butter-fat, partly owing to care in breeding, and partly owing to the climate and fertility of the soil, results are easily obtained in New Zealand which in this country can only be equalled by systematic attention to both breeding and feeding. On the other hand, as will be shown later on, far better results would probably be obtained in the Colony if dairy cows were housed in the winter, and more attention were given to winter feeding and the cultivation of the soil on lines similar to those followed by the farmers in Ontario, Canada.

SYSTEM OF DAIRY FARMING.

This brings me to the system of dairy-farming in New Zealand. As already stated, the greater part of the milk produced in the Colony, which is intended to be converted into butter or cheese, is taken to creameries and factories. There are, however, many farmers who make their own butter, and a few their own cheese. "Farmers'" butter, as a class, realises far less than factory-made butter in the Colony, and if exported is blended.

By far the best Cheddar cheese is made by Mr. Candy, one of the old Somerset family of cheese-makers, who has for many years had a farm near Christchurch. Mr. Candy's cheese is quite different from, and vastly superior to, any factory cheese in New Zealand; it commands a better price, and would hold its own with that of the best makers here. A Mrs. Richards, who also has a farm near Christchurch, makes a very excellent Stilton.

With a few exceptions, and those chiefly in the neighbourhood of Christchurch, the quality of cheese made in private dairies is far below that made on farms in the home country. The cheese made on the factory system which I tasted at farms in Otago was decidedly disappointing.

The farmer is therefore a milk producer, and the introduction of the Babcock Tester has taught him that not only quantity but also quality must be aimed at in the milk supply.

Many farmers keep a careful register of the quality as well as of the quantity of their milk; and I was glad to find how universally the Babcock Tester was being used in all well-managed dairies. It is laid down as a principle by Mr. McEwan, and adopted by the Managers of Dairy Factories, that: "Everything else being equal, quantity and quality of milk combined indicate the commercial value of the cow for either butter or cheese." The result of this has been to direct attention to the breeding and selection of the best and richest milkers as dams. But here, unfortunately, the "system" seems to stop; neither in the provision of warmth by housing, nor in winter feeding, is the New Zealand farmer at all on a par with his Canadian cousin. Though the climate of New Zealand is mild and the winters are short, there is a heavy winter rainfall in the districts where most of the dairying is carried on, and the grass in the winter and early spring has very little nourishment in it. Just as in this country, those who have the worst climate to contend with are the best farmers, so in New Zealand the farmers of Otago and Southland are far ahead of their more favoured brethren in the North Island, especially as regards the care of their cattle in the winter.

Roughly speaking, the dairy lands may be divided into two classes; land formerly covered with forest, or "bush," as it is called, and cleared within the last fifteen years; and land which, since European occupation, has been clear of bush, and was formerly covered with fern and a variety of native growths, from tussock-grass to "scrub," by which latter term is denoted an undergrowth of shrubs, thorns, and creepers. The bush land, after being cleared by cutting down and burning the timber, is sown with permanent grasses and clovers, which as a rule grow with great luxuriance, and for many years give a very rich pasture. Dairy cows fed on these pastures produce milk especially rich in butter-fat; but it has been noticed that after from seven to ten years the richness gradually diminishes, so that it becomes a question whether or not the pastures on old bush land will go on deteriorating or will recover their feeding properties in future years. To clear the land of the burnt stumps and trunks of the old bush involves too much expense, though in course of time nothing but the roots are left. Even then it costs nearly as much as the original price paid for the land, sometimes even more, to drag out the stumps and roots by means of levers worked by bullocks. This done, however, the land can be ploughed and excellent crops grown on it.

ush land when cleared is some of the most valuable land for dairying in the Colony.

On the other land, the fern and "rubbish" have to be burnt off, and the land, if flat, ploughed and cropped before it can be sown down. In very few districts can a profitable permanent pasture be obtained on this class of land, and it pays better, when the land is ploughable, to grow a rotation of crops. This, however, the farmer too often neglects to do, and worn-out, unprofitable pastures constantly meet the traveller's eye.

Another danger also arises from the presence of noxious weeds, chief amongst which are the "Cape-weed" and "penny-royal," which have a very bad effect on both cheese and butter. Where pastures are allowed to "run out," the "Cape-weed" often takes possession, and when it does so it comes to stay. The best farming among individual farmers which I noticed while passing through the Colony was in the Taieri District, near Mosgiel, and about ten miles from Dunedin. Here, on farms of about 250 acres in extent are found magnificent crops, a plentiful use of manure, first-rate winter housing for cattle, and well arranged lairies. All through the fine belt of land which stretches for some 120 miles from Dunedin to Invercargill to the West, and to the Maitai District, about thirty miles to the north of the latter place, one is struck by the excellent crops and thriving farms. My remarks must, however, be confined to the Dairy section of farming, for I could not but notice that in several places in this district the pastures were worn out and unprofitable, and oats, swedes, and turnips, with the addition of a little hay, were all that was provided for winter feeding. In the Wairarapa District, in the Wellington Province, in the Hawke's Bay District, and in several other places in the North Island, although the land is very suitable for ploughing and growing winter crops, no provision at all seemed to be made for the cows in winter. In fact, the system pursued on too many dairy farms seems to be, to milk the cows so long as the grass lasts, and then to leave them to take their chance in the "bush" or anywhere during the two, three, or four winter months.

In the Waikato District, in the Auckland Province, where there are a large number of dairy factories and creameries, I was informed that the cows were, as a rule, milked for eight months only in the year, and that the only winter feed provided was turnips, to be eaten off "unpulled" in the paddocks. There are of course some exceptions to this, notably where herds of Jerseys are kept.

Speaking generally, neither in the way of housing nor in winter feeding is the New Zealand dairy farmer up to date.

On this point Mr. McEwan has spoken very strongly, and coming, as he does, from the Province of Ontario, Canada, where "soiling" for dairying is so universally and so successfully carried out, he is fully alive to the fact that a much larger head of cattle could be kept on the land, and far better results obtained, were the cows properly fed and cared for in the winter. With this object he has tried to induce the Government to establish, for the carrying on of experiments, farms similar to those in Canada, where regular courses of instruction could be given in all branches of dairying. There is an old-established Agricultural College, with a farm attached to it, at Lincoln, near Christchurch; but this is intended for all classes of farming, and by attempting too much has not been of sufficient practical benefit to the small farmer.

Dairying is a specialité in itself, and the best authorities recognise that in dairying, and its accessory the keeping of pigs, we have quite sufficient material for an independent school of instruction, with experimental farms for demonstration. I regret to add that as the present Government in New Zealand cannot see "votes" in Mr. McEwan's suggestion, there seems to be no immediate prospect of their being carried into effect. Another hindrance to the establishment of a system of good farming throughout the Colony is, in my opinion, caused by the regulations in force for putting settlers on the lands belonging to the Government. During the last three or four years the Government has endeavoured to prevent the overcrowding of the towns, and to find occupation for the unemployed, by cutting up blocks of land into small holdings, which are leased or sold to settlers on easy terms. A further provision has been made, enabling the Government to advance money, at low rates of interest, to these settlers for the improvement of their land, on the security of the holdings.

In theory, nothing could be better, but in practice the system has in some places been a failure, and in many other places has not been the success it might have been. In the first place, the amount of land which a man may buy from the Government is very limited; and, if he succeeds by intelligence, energy, and thrift, in putting himself into a position to increase his holding, he is debarred from buying any more land from the Government. In the next place, the land when thrown open for settlement is ballotted for, with the result that it frequently happens that the successful parties have not had the slightest previous experience in farming, while men who would make excellent occupiers of the farms fail to get the land. Lastly, when the land is leased from the Government, applications are in a short time made for reduction of rent, which, meaning votes at the next election, are

frequently successful. The farms are often without roads or markets, and in many instances it takes two or three years before any returns can be made off them; in these cases the Government has to step in and find work for the farmers on the roads to enable them to pay their rents and the instalments of the purchase monies. This system not only leads to much corruption, but is entirely subversive of good and successful farming.

A far better system would be to encourage instead those who have already had some experience in farming, and to offer facilities for first training the agriculturist, and then starting him on the land, where he can employ the knowledge and experience he has gained. In the Colonies, as in England, it is found most difficult to get the older farmers to adapt themselves to modern ideas of cleanliness, and to give their attention to those matters which enable the farmers in Denmark and elsewhere to successfully compete with us. Hence it is by training the rising generation that we must look for success in the future. How this has been carried out in Canada and with what results, has been testified to by many agriculturists who have visited that Colony, and is apparent even to anyone who, like myself, has spent a short time in the neighbourhood of Toronto.

CHEESE AND BUTTER FACTORIES.

There were, at the beginning of September, 1895, 242 butter and cheese factories and creameries at work in the Colony of New Zealand. The chief centres of the dairy industry in the North Island are the "Waikato" in the Auckland Province; Woodville and other townships of the Forty Mile Bush in the Hawke's Bay Province; the "Wairarapa" in the Wellington Province; and along the West Coast from Palmerston to New Plymouth. Most of the factories in these places are employed in making butter, and, as a rule, the cheese made in the North Island is inferior in quality to that coming from the South Island. In the South Island there are fewer factories; the chief centres for butter factories being in the neighbourhood of Christchurch, and Bank's Peninsula, in the Canterbury Province.

Coming to Otago, one finds a few excellent butter factories in the neighbourhood of Dunedin; but the centre of the cheese industry is to be found in the Southland factories, of which Edendale is the premier, in point of origin and in superiority of produce. In fact, I believe that Mr. Brydone, the Chairman of the New Zealand and Australian Land Company, was the first to start a cheese factory on a large scale in the Colony, building

one on the Company's magnificent estate at Edendale; he was also the first to promote the woollen industry at the Mosgiel Mills, and the first, too, to start that frozen mutton industry, which has attained such a marvellous development during the last ten years. It is to men like Mr. Brydone that the Colony owes so much for the expansion of her trade in dairy produce and frozen meat, and it is to be regretted that the Colony is not now being governed by men of his stamp.

Speaking generally, the best butter comes from the North Island, while the best cheese is produced at the factories near Christchurch and in Southland.

So far as the butter industry is concerned, it may be regarded as successful and thriving; and if the difficulty of noxious weeds is overcome, and a rather closer-grained butter, needing less salt, and somewhat drier in character, can be obtained, I see no reason why New Zealand need be afraid of any competitor.

As regards the cheese industry, that cannot be considered a success. As a class, the New Zealand Cheddars, which form the bulk of the factory-made cheese of the Colony, are decidedly inferior to the better classes of English and Scotch Cheddars.

FAILURE TO PRODUCE FIRST-CLASS CHEESE.

This is due, I think, to many causes. In the first place, there are no old pastures such as are to be found in this country; in the next place, noxious weeds spoil the flavour in some districts; but, apart from these, there are causes which are easily preventible. The whey is heated by steam in a "jacketed" vat, instead of being drawn off, heated, and then added as a "scald" to the curd. The temperature of the scald in the New Zealand factories is far lower than that used by English Cheddar-makers. The pressing is too rapid and severe. The cheeses are not ripened before export; and, after leaving the factory, are subjected to varying changes of temperature, and travel to England at a temperature averaging 45°, during a period when they are supposed to be ripening. Consequently, New Zealand cheeses exhibited at Dairy Shows in England are found to be very inferior to home-made ones. They have the appearance of having been first overheated and afterwards chilled. While they cost from 45s. to 47s. per cwt. to deliver to the London buyer, they rarely fetched as much as 40s. per cwt. in London during 1895 and the first six months of 1896, though the price rose to 52s. per cwt. last autumn, in consequence of the shortness of the home supply.

THE FACTORY SYSTEM.

The New Zealand factory is situated, as a rule, in the centre of a dairy district, and, when possible, near a railway station. It can thus receive cream by train from the creameries which collect the milk from farms too remote to deliver the milk direct to the factory, and the manufactured produce—butter and cheese—can be placed in the insulated cars without exposure to heat in transit.

Some factories I visited were entirely supplied by milk direct from the farms, receiving as much as 3,000 gallons per day; others received nothing but cream; while others, again, took both milk and cream.

BUTTER FACTORIES.

In a butter factory the general method of making and dealing with the butter is as follows:—The milk is first weighed—the Haffo Scale Company's weighing-machine being universally used; a sample of each supplier's milk is taken, put into a bottle with his name on it, in which either a few grains of Bichromate of Potassium, or "corrosive sublimate," are placed to act as a preservative, and once a week the milk is tested for butter-fat by the Babcock Tester, and the milk paid for at a rate dependent on the amount of butter-fat shown by the test. After weighing, the bulk of the milk from each supplier is discharged into a steam-jacketed vat, where the temperature of the milk is raised to 86°. As a rule, the supplier brings the evening's and morning's milk mixed, and only in a few places are there two deliveries. Some suppliers place the evening's milk in cool chambers, but there is room for improvement in the care of the evening's milk. After being heated, the milk passes to the separators. The "Deval" is the most favoured separator; but, in the largest factories, the "Burmeister and Wain" runs it close. Some of these separate 300 gallons per hour, and make 2,700 revolutions per minute.

The separated milk is discharged at a higher level and runs into vats, whence it is drawn off and taken away by the siphon. The cream, passing through a tube into a lower level, runs into a "jacketed" vat, where it is at once cooled down to 45°.

In a few instances the cream is Pasteurised, immediately after separation, by being raised to 168°, kept at that temperature for fifteen minutes, and then reduced to 50°; this is mostly done at creameries to preserve the cream for travelling.

The cream is in some factories raised to 68°, for the purpose of adding a starter. Other factories do not use a starter, while

others, again, employ one only in the winter. The cream it has been previously raised for the starter, is then lowered, if not, it is raised to from 56° to 58° , and in winter sometime 60° , and, where the starter is used, kept at that temperature from sixteen to eighteen hours to ripen. Where no starter is used it is kept, twenty-four hours in summer, and forty-eight hours in winter, to ripen. Where bought cream is added to the separator cream, the ripening depends on the condition of the bought cream, and the manager has to use his own discretion. In the factories the cream is mixed and kept in motion for three or four hours by wooden mixers, moved slowly backwards and forwards.

All the work is of course done by machinery; steam generally, and sometimes electricity, being the motive power. As the cream is ripened, it is passed direct into the churns. These, as a rule, are plain, oblong, rectangular boxes without beaters, the largest being capable of turning out up to 800 lbs. of butter at one churning.

In some factories I saw churns with "beaters" inside; one called "the Streamlet," resembled the Disc Churn in its action and was said to be speedy and a good worker, but difficult to clean. Danish churns had been tried and discarded at Epsom; and the plain box churn seemed to be the most popular.

The churning, as a rule, takes thirty minutes; in the factories the churn is worked at thirty revolutions per minute, in others at a higher speed. When the butter breaks in the churn, water is introduced by a hose; there are two washings after drawing the butter-milk, and the churning is continued until a satisfactory grain is obtained. The churn is then opened and the butter taken out with wooden shovels and placed on a wooden worker. Various sorts of workers are used; among the most noticed "Bradford's Armentine" and the "Fargo," the latter has a revolving table with two rollers side by side, one higher than the other. The butter is worked and then left, in some cases for 12 hours, in others for 24 hours, when it is again worked and from $2\frac{1}{2}$ per cent. to 5 per cent. of salt, with about 1 per cent. of preservative, is added. It remains another 24 hours on a wooden worker before being packed.

This system of working the butter is contrary to McEwan's instructions; but only in one factory, the Cheviot, near Fielding, did I find the butter worked rapidly so as to keep it from exposure to the air, and to insure it being packed in boxes within 24 hours after churning. The butter, after having been worked and ready for packing, is put into square boxes lined with parchment paper, and hold 56 lbs. each.

When packed the butter is placed in the cool store, where it remains till there is a sufficient quantity to send down to the works. The temperature of the cool chamber is controlled by a freezing machine, and can be raised or lowered at will. The cool chambers will probably in future be all insulated by means of "pumice," which is an excellent non-conductor and antiseptic. Each butter-box is branded with the trade mark of the factory, the date when the butter is made, and the Government brand.

The butter when sent to the port is taken to the cool stores and graded by a Government officer, who classes it according to quality, the class being branded on the box. A report is sent to the factory, so that any fault in the butter is immediately required into, and the cause detected and dealt with by the directors of the factory. The butter after being graded is packed on board ship, and kept at a temperature just below freezing point.

How it is dealt with on arrival here is a question to which any English consumers would like an answer. It would certainly be to the interest of both producer and consumer if a method could be found for ensuring that New Zealand butter is sold as such.

CHEESE FACTORIES.

With reference to cheese factories, I can only speak from a personal knowledge of those where cheese is made on the Cheddar system; this, however, is the one adopted in nearly every factory. The Stiltons which are made in a few factories are consumed in the Colony. I found less care in testing milk for the cheese than at the butter factories, and it was more often the rule to give an all-round price per gallon for the milk, and that a lower price than for milk supplied to butter factories. In February, 1896, 2d. a gallon was the price fixed by any cheese factories for milk then being supplied.

Where a better system of management is followed, the milk is tested, and payment depends, as in the case of butter, on the amount of fat in the milk. At the Edendale Factory, I found the standard for milk was 3·6 butter-fat, giving 1 lb. of cheese from 11 lbs. of milk; this would be an average result. The evening's and morning's milk are mixed together and heated to 86°, at which temperature the milk is tested with rennet—dr. to 4 oz. of milk; if coagulation takes place in twenty seconds, the milk is considered ripe for applying the rennet. Hansen's rennet is universally used—about 3½ oz. to 1,000 lbs. of milk. If the cheese is to be coloured, Hansen's annatto is used—about 1 oz. to 1,000 lbs. of milk. As a rule, New

Zealand cheese is coloured; at the Edendale Factory both white and coloured cheese are made. The curd is cut for about three quarters of an hour before heat is applied. After this, the vat is heated by steam or hot water, raising the contents to a temperature of about 98°. After remaining forty minutes at this temperature it gradually cools, and when the curd will draw out $\frac{1}{8}$ to $\frac{1}{4}$ inch by the hot-iron test it is time to run the whey off. The curd is then handled on racks in the vat or in a sink (cooler), and, when dry, is allowed to "cheddar mat" for about two hours. It is then milled, McPherson's curd-mill being used in most factories; after this, it is kept loose to expel any gases from over-ripe milk or noxious weeds, and, after being thus aerated for about half an hour, salt is added—about 2½ lbs. to 3 lbs. per 1,000 lbs. of milk.

The next process is "hooping" the curd, which at this period should be at a temperature of 80°–85°. The hoops are placed horizontally in a Factory Cheese Press against a strong spring at one end, and pressure is applied by screwing them up from the further end, so that an even and continuous pressure is maintained by means of the spring. When the curd is "hooped," cloths are placed in the hoops and remain attached to the cheeses after they are taken out, and discs of wood protect both ends of the cheese. The pressing seemed to me to be far too severe at first, as the whey is almost entirely exuded in the course of from 10 to 15 minutes. The cheese only remains in the hoops about seventeen hours, when it is removed to the curing-room, which is kept at a temperature dependent, more or less, on the season, and varying from 57° to 68°. After remaining in the curing-room from 12 to 14 days, being turned every day during that period, the cheese is sent off by train to the Stores at the port. In a few days it is put on board ship, and travels to England at a temperature of about 45°–50°; so that the cheese never has an opportunity of ripening. The object appears to be to turn out an article which will be ready for consumption in a short period, but no attempt is made to produce a really fine-class cheese. Some cheeses that were sent from the Hawera Cheese Factory to one of our Somersetshire Agricultural Shows this year compared very unfavourably with English Cheddars, and were considered by the Judge to have been overheated at one period, probably during the railway journey to the port, or while at the port, and chilled afterwards, no doubt on the voyage home. As regards texture and amount of fat, they were said to be equal to many of our best cheeses.

CONCLUSION.

I have no pretension to be considered an expert in dairy matters, nor even an authority; but in common with many others, I feel a deep interest in an industry upon which so many are dependent for their livelihood; an industry, too, so admirably suited to this country, and which might be in a flourishing condition at the present time and with present prices. But some dairy farmers still cling to antiquated methods, which are both unsound from a business point of view and wasteful in practice. I feel confident that, though we may be beaten in lower grades, no imported article can compare with our best home dairy produce, and I see no reason why we should rest content with turning out inferior goods when with the care we can produce the best.

VIII.—*Farming in Shropshire in 1875 and 1895.*

By ROBERT E. TURNBULL, F.S.S.

IN order to measure the extent of the agricultural depression that prevails in this county and to see what steps have been taken to meet it, the following particulars of the live stock and crops, and estimates of the value of the same in 1875 and in 1895, may be interesting.

In 1875 the quantity of land under cultivation, including grass land, was 696,122 acres; in 1895, 717,963 acres, being an increase of 21,840 acres = 3·14 per cent. In grass land there has been an increase in the last twenty years of 86,155 acres; the quantity in 1875 being 369,365 acres, and in 1895, 455,520 acres—the increase = 23½ per cent. In 1875, 53 per cent. of the cultivated land was under grass; in 1895, 63·18 per cent. The increase in the quantity of grass land and the diminution of the area under the plough have been accompanied by an increase in the quantity of live stock kept on agricultural holdings; but the fact that the quantity of land under cultivation was greater in 1895 than in 1875 must not be lost sight of. The area of arable land in 1895 was less than in 1875 by 64,316 acres = 19·70 per cent., being now about 37 per cent. of the cultivated land as compared with 47 per cent. in 1875. Cold clay land is now kept, as a rule, green-side uppermost.

The area under grain crops in 1875 was 176,622 acres; in 1895, 131,809; the decrease being 44,813 acres = 25·37 per cent. The decrease in wheat was 71·30 per cent.; and in beans,

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peas, and rye, 55 per cent. In the oat crop there was a large increase, viz. 66·66 per cent.; and in barley, 6·83 per cent. Of the total area under corn crops in 1875, wheat occupied 82,511 acres = 46·70 per cent.; in 1895, only 23,668 acres = 17·95 per cent. Wheat is no longer king. The leading position is now occupied by barley, of which 57,280 acres were grown in 1895, against 53,618 in 1875. The oat crop in 1895 occupied 44,711 acres, and in 1875, 26,824 acres. Of beans, peas, and rye, only 6,150 acres were grown in 1895, against 13,669 in 1875. In green crops, the decrease in 1895, as compared with 1875, was 7,550 acres = 11·68 per cent.

	1875.	1895.	Decrease.
	Acres.	Acres.	Acres.
Turnips and Swedes	50,313	44,053	6,260
Mangolds	5,177	5,025	152
Potatoes	5,374	6,412	..
Other Green Crops	3,761	1,585	2,175
	64,625	57,075	8,587
Increase in potatoes .. ..	..	..	1,037
Net decrease in Green Crops .. ..	..	..	7,550

In potatoes, the increase in the number of acres grown in 1895 was 1,037 = 19·60 per cent. The decrease in turnips and swedes was 6,260, and in mangolds, 152, together 6,412 acres = 11·55 per cent. In other green crops the decrease = 57·83 per cent.

Of clover and rotation grasses there were 6,090 fewer acres in 1895 than in 1875 = 8 per cent. In 1895 there were 150,187 acres under hay as against 117,930 in 1875, being an increase of 32,257 acres = 27·35 per cent. Of pasture land, including "seeds" grazed, there was an increase in 1895 of 47,810 acres = 14·60 per cent. In 1895 there were only 3,577 acres of bare fallow and uncropped land, as against 9,786 acres in 1875; the decrease being 6,209 acres = 63·45 per cent. Of woods and plantations there were, in 1895 50,490 acres, or 10,790 acres more than in 1875 = 22½ per cent.

The total area of land and water in Shropshire is 859,516 acres, of which 5·87 per cent. is woodland; land under cultivation, 83·53 per cent.; mountain and heath land used for grazing (32,610 acres), 3·87 per cent. In England, the proportion of woodland is 5·12 per cent. Of orchards, or of arable and grass land used also for fruit, there were in Shropshire, in 1895, 4,570 acres, as compared with 2,685 in 1875, being an increase of 1,885 acres = 70 per cent.

YIELD.

As compared with the average of the ten preceding years, the corn and hay crops in 1895 were under the average. Potatoes, turnips, and swedes were over the average.

YIELD : DECREASE IN 1895.

Corn Crops.		Hay and Mangold Crops.	
	Per cent.		Per cent.
Wheat	8·42	Meadow Hay	22·36
Barley	2·94	"Seeds" Hay	21·30
Oats	1·21		..
Beans	10·57	Mangolds	3·68
Peas	4·10		..

INCREASE IN YIELD IN 1895.

Potatoes, 11·42 per cent.; turnips and swedes, 5·09 per cent.; hops, 69·78 per cent.

In 1885 an official estimate of the *ordinary* average yield of farm crops in Shropshire and other counties was made, particulars of which were published in the 'Agricultural Returns.' In the 'Agricultural Returns for 1895' the average yield for the ten years, 1885-94, are given: these show that since 1885 an improvement has taken place in the average yield of wheat, barley, oats, meadow-hay, and hops, viz. wheat, 2·36 bushels (imp.); barley, 0·37; oats, 2·59; meadow-hay, 0·30 cwt.; hops, 0·13 cwt. On the other hand, a decrease is shown in respect of beans, peas, turnips, swedes, mangolds, and seed-hay,—viz. beans, 0·44 bushels; peas, 0·41; turnips and swedes, 3·56 tons; mangolds, 0·7 tons; "seeds" hay, 5·34 cwt. In the last ten years much greater attention has been given by many farmers to the quality of the grain used for seed purposes, particularly as regards wheat, barley, and oats, resulting in an improved average yield, and also in a higher quality of grain. Lime has not been applied to the land to the same extent as formerly, and this accounts, to some extent, for the marked decrease in the average yield of turnips, swedes, and clover hay—a decrease which has added considerably to the cost of producing meat and milk.

In the following tables the yield of grain, hay, and root crops is calculated on the basis of the ordinary average yield, as ascertained during the inquiry instituted by the Government in 1885. Had the estimate of the average of the ten years, 1885-94, been adopted, the value of the wheat, barley, and oat crops of 1875 would have been increased by 8·66 per cent., 1·21 per cent.,

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and 7·83 per cent. respectively. Again, had the year 1874, instead of 1875, been selected for comparison with 1895, the decrease in the value of the produce shown as having taken place in 1895, as compared with 1875, would have been much larger, serious as it appears.

BRITISH CORN—AVERAGE PRICES PER IMPERIAL QUARTER.

				1874.	1875.	1895.
				s. d.	s. d.	s. d.
Wheat	..	..	..	55 9	45 2	23 1
Barley	..	..	..	44 11	38 5	21 11
Oats	..	..	..	28 10	28 8	14 6

The high prices that ruled for wheat in 1872, 1873, and 1874, in consequence of the great Franco-German War, have never since been reached in this country, except in 1877, when wheat averaged 56s. 9d. The price steadily fell till, in 1885, the price was 20s. 1d. per quarter below the average of 1874; and in 1895, when the lowest average price of the century was reached, viz. 23s. 1d., the price was 32s. 8d. per quarter below the average of 1874 = 58½ per cent. Since 1874, barley has fallen in price 23s. per quarter = 51·22 per cent., and oats, 14s. 4d. per quarter = about 50 per cent.

The value of the grain grown in Shropshire in

1875 was 1,273,900		in 1895 ..		500,000
Straw (22s. 6d. } per ton)	247,500	Straw (20s. } per ton)		150,000
<hr/>		<hr/>		<hr/>
Total value of the Corn		Total value of the Corn		
Crops of 1875 }	1,520,800	Crops of 1895 }		650,000
<hr/>		<hr/>		<hr/>
Decrease in value, 870,800 <i>l.</i> = 57·20 per cent.				
Value per acre in 1875, 8 <i>l.</i> 12 <i>s.</i> 3 <i>d.</i> ; in 1895, 4 <i>l.</i> 18 <i>s.</i> 8 <i>d.</i>				
Decrease in value, per acre, 3 <i>l.</i> 13 <i>s.</i> 7 <i>d.</i>				

Of hay, 185,150 tons were grown in 1875, and 150,930 tons in 1895; the value at the farm was

In 1875	..	..	..	740,600 (80s. per ton).
In 1895	..	..	..	528,250 (70s. per ton).

The decrease in value being 212,350 = 28½ per cent.

Of early and late potatoes, 36,000 tons were grown in 1875, and 46,285 tons in 1895. The increase in quantity was 10,285 tons = 28·57 per cent.; but the decrease in value was, nevertheless, 27,350l.,—the value per acre being fully 7l. 10s.

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greater in 1875 than in 1895, viz. 20*l.*, as against 12*l.* 10*s.*
Estimated value of the crop:—

1875	£ 107,500
1895	80,150

Of turnips, swedes, and mangolds, the quantity grown in

1875 was	1,100,000 tonf.
1895 „	848,000 „

Or 252,000 tons less in 1895 than in 1875 = 22 $\frac{1}{10}$ per cent.

The consuming value per ton in 1875 was about 7*s.* 6*d.*, and
in 1895, about 6*s.* Estimated value of the crops:—

TURNIPS, SWEDES, AND MANGOLDS.

1875	£ 412,500
1895	254,000

Taking the value of meat and dairy produce into account, the
value per acre of permanent pastures and “seeds” grazed was
in 1875, 42*s.* 6*d.*, and in 1895, 35*s.*

Estimated value, 1875	£ 695,000
„ „ 1895	656,000

The reduction in value, although taken at 7*s.* 6*d.* per acre
(17·65 per cent.) under the value per acre in 1875, only amounts
to 39,000*l.*, there having been 47,810 more acres grazed in 1895
than in 1875. In other crops there was a reduction in value of
19,000*l.* The estimated total value of corn crops, hay crops,
green crops, and pastures works out to

3,504,500 <i>l.</i> for 1875 =	£ 5	0	8	per acre.
2,177,500 <i>l.</i> „ 1895 =	3	0	8	„ „

Estimated decrease in value, 1,327,000*l.* = 37*s.* per acre in
respect of the acreage of 1895, and 40*s.* per acre as between the
average value per acre of land occupied in 1875 and in 1895
respectively. The decrease in value = 37 $\frac{7}{10}$ per cent.

VALUATION SUMMARY.

—	1875.	1895.
	£	£
Corn Crops	1,520,800	650,000
Hay Crops	740,600	528,250
Green Crops	548,100	343,250
Pastures	695,000	656,000
	£ 3,504,500	2,177,500

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Per Acre, 1875	£	s.	d.	
„ 1895	5	0	8	
Estimated decrease in value, 37 $\frac{1}{10}$ per cent. =	1,327,000			l.
Estimated decrease in expenses, rent, seed, feeding }				£
stuffs, manures, &c., 22s. per acre				790,000
Estimated decrease in nett income				= 537,000
				<u>1,327,000</u>

The estimated value of farm produce sold or consumed in farm households was in :—

1875	£	1,280,000
1895		<u>460,000</u>
Estimated reduction in value = 64 per cent.		820,000

LIVE STOCK.

The estimated gross revenue from live stock was in :—

1875	£	2,047,000
1895		<u>1,740,000</u>
Estimated reduction in 1895 = 15 per cent.		307,000

Farm produce, dairy produce, fat stock, and horses :—

1875	£	3,327,000
1895		<u>2,200,000</u>
Reduction in 1895 = 33·87 per cent.		1,127,000

In order to test the valuation of the crops by the gross revenue, there are several points to be considered. Seed corn and seed potatoes, though produced on agricultural holdings and chiefly in the county, not being available for revenue purposes, their value must necessarily be added to the amount stated under the heads of farm produce and live stock sold. The value of food consumed by working horses should also be added, as the value of their labour is not included in gross revenue. Straw used for bedding and thatch, not being available for stock food, though formerly it was too often trodden under foot when it might, if more covered yards had been provided, have been used as fodder, must be valued and credited to the account, probably one-half the supply in 1875 and one-fifth the supply in 1895. From the total amounts thus arrived at, there must be deducted the value of purchased food consumed in each year of account. Any difference, too, in the quantity of food for cattle, sheep, and pigs on hand, and in the number of stock reared, must necessarily be taken into consideration. Several

of these factors are difficult, if not impossible, to estimate satisfactorily, but the following deserve mention :—

	1875.	1895.	1875.	1895.
	£	£	£	£
Keep of working } Horses	25	15	470,500	303,000
Seed Corn	about 12s. per acre	about 7s. per acre	106,000	46,000
Bedding and Thatch	10s. per ton ..	10s. per ton ..	55,000	15,000

The estimated value of food consumed by working horses amounts to 13s. 6d. per acre in 1875, and 8s. 6d. per acre in 1895, for the whole of the land occupied, and 23s. 3d. per acre in 1875, and 16s. 6d. per acre in 1895 for the arable land, and grass land under hay, being a reduction of 5s. per acre when applied to the whole of the land occupied, and 6s. 9d. when charged against the arable and meadow hay land only. Although the cost of keep per working horse has been reduced from 25l. to 15l. = 40 per cent., or 10l. per horse, the total value of the grain, hay, straw, and green food consumed has only been reduced by 35·65 per cent. In 1875, the number of horses employed on the land and used solely for agricultural purposes was 18,824. In 1895, with 37,032 fewer acres under the plough and in meadow hay (9½ per cent.), and with 64,315 acres (= 19½ per cent.) less arable land, 20,202 horses are employed solely on the land, or 1,378 (being nearly 7½ per cent.) more than in 1875. In 1895, the percentage of unbroken horses and of mares kept solely for breeding purposes was 43½ per cent. of the whole number enumerated; in 1875, 34½ per cent. This fact points to a greater proportion of the mares employed on the land being also used for breeding purposes in 1895 than in 1875, in which case a larger number would necessarily have to be employed per 100 acres. Hours of labour, too, are somewhat shorter than they were twenty years ago. Mr. Bowen Jones, of Ensdon House, Montford Bridge, Shropshire, in the valuable practical evidence that he gave before the Royal Commission on Agriculture in March, 1895,* stated that, although he had laid down 50 acres of arable land to grass, and had changed 80 acres of arable land from four course to five course, and had taken advantage of improved machinery and implements, his labour bill was nevertheless the same in amount in 1895 as in 1874. A much larger quantity of produce was of course required to meet the outlay in 1895

* See page 370 of the Report.

than in 1874, and in that sense he considered that the cost of labour had very considerably increased. Ensdon House Farm comprises 720 acres, of which 307 are grass and 413 arable. The increase in the number of farm working horses in Shropshire, in the face of a diminished area of arable land, may probably be partly due to less work being accomplished per day than formerly.

The decrease in the value of grain grown in 1895, as compared with 1875, was 773,300*l.* = 60 per cent. The value of grain per acre was approximately—

For 1875	<i>£</i>	<i>s.</i>	<i>d.</i>
" 1895	7	4	3
	3	15	0
Reduction in value per acre	3	9	3

Estimated value of grain consumed by working horses—

1875	<i>£</i>	<i>s.</i>	<i>d.</i>	
1895	329,350	17	10	0 per horse.
	202,000	10	0	0 "

Estimated value of seed corn—

1875	<i>£</i>	<i>s.</i>	<i>d.</i>	about
1895	106,000	0	12	0 per acre.
	46,000	0	7	0 "

As horse corn for working horses and seed corn must be retained from the crops under any circumstances, the real effect of a fall in prices is best shown by a comparison of the value of the crops after deducting the value of grain required for working horses and for seed purposes, and therefore not available either for sale or for food for young stock and for the production of meat. Proceeding on this basis, the following result is shown:—

Value of grain available for sale and for stock food (working horses excepted)—

1875	<i>£</i>	<i>s.</i>	<i>d.</i>	
1895	838,000	about 4	15	0 per acre.
	252,000	"	1	18 3 "
Reduction in value per acre		2	16	9

The real reduction in value is therefore 12*s.* 6*d.* per acre less than is shown by a comparison between the value of the grain grown in each year. If the whole crop is valued for each year, then of course it is necessary to deduct under the head of expenses the decreased cost of seed corn. After deducting every saving in decreased rent, labour, and manures, the nett value of the corn crop of 1895 was fully 2*l.* per acre less than the value of the crop of 1875. The average yield of grain per acre in Shropshire during the ten years, 1874–1895, wheat, barley, and oats, was: wheat, 15·85 cwt.; barley, 14·11 cwt.; oats, 12·24 cwt.

In equal quantities the average is $14\frac{1}{10}$ cwt. It is only on land, producing one ton of grain of good quality per acre, that corn can, at the prices ruling in 1895, be successfully grown. This can alone be accomplished by ordinary outlay when the land is naturally fertile and well managed.

COMPARATIVE VALUE OF CROPS PER ACRE.

	1875.	1895.	1895. Decrease in Value per Acre.
	£ s. d.	£ s. d.	£ s. d.
Corn Crops	8 12 3	4 18 8	3 13 7
Hay Crops	6 5 6	3 10 4	2 15 2
Turnips, Swedes, and Mangolds ..	7 8 9	5 3 9	2 5 0
Potatoes	20 0 0	12 10 0	7 10 0
Pasture, Grass, and "Seeds" ..	2 5 0	1 15 0	0 10 0

Increase in Grain Crops.			Nett Decrease in Grain Crops, 1895, as compared with 1875.			
	Oats.	Barley.	Oats.	Wheat.	Barley.	Beans, Peas, Rye.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
United Kingdom ..	8·42	..	22·22	58·28	14·72	43·07
England	43·85	..	24·04	57·17	12·08	44·13
Shropshire	66·66	6·83	25·37	71·31	..	55·00

LIVE STOCK.

In soil and climate alike Shropshire is well adapted for stock breeding. The pastures, as a rule, are sound, well sheltered, and well watered. The Severn passes through the county, and, together with its tributaries, affords an abundant supply of water, and gives life and beauty to the scenery. Much of the arable land is qualified, under good management, to produce abundant crops of roots of the best quality, and equally good crops of clover and mixed "seeds." Increasing and intelligent attention has been given to the breeding of live stock in the county during the last twenty years, more particularly as regards sheep. For many centuries Shropshire has been noted for its wool; but during the lifetime of breeders now living, and of that of their fathers before them, an immense improvement has taken place in the quantity both of mutton and wool

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produced by Shropshire sheep. As *economical* producers of first-class mutton, the Shropshire is certainly not excelled by any other breed.

The number of live stock on agricultural holdings in the county is now nearly 12 per cent. greater than in 1875.

	Horses.	Cattle.	Sheep.	Pigs.
	No.	No.	No.	No.
1875	28,574	143,200	496,418	56,872
1895	35,205	164,928	457,987	81,560
Increase in number ..	6,631	21,728	..	24,688
Decrease in number ..	..	..	38,431	..

The increase in the number of horses was $23\frac{1}{2}$ per cent.; in cattle, $15\frac{1}{4}$ per cent.; in pigs, $43\frac{3}{4}$ per cent. In sheep there was a decrease of $7\frac{1}{4}$ per cent. In 1881, there were 200,500 fewer sheep in the county than in 1874 ($= 37\frac{1}{4}$ per cent.), there having been 530,500 in 1874 as against 330,000 in 1881. Between 1874 and 1878 the number decreased by 36,000 ($= 6\frac{3}{4}$ per cent.), but between 1878 and 1881 the reduction in number was 164,500 ($= 33\cdot36$ per cent.) as compared with 1878. 1879 was a disastrous season, both as regards grain and sheep. Harvest in some districts was not completed till the winter, and both in quantity and quality the grain was wretched in the extreme. The water-logged fields gave rise to liver rot in sheep, and proved well-nigh ruinous to flock masters, resulting in their flocks being reduced in number by one-third in the three years 1879, 1880, and 1881. Since that date, and up till 1892, nearly every year there has been an increase in the number of sheep kept. In 1892, there were nearly 27,000 more sheep than in 1875, the number being 523,690 as compared with 496,418 in 1875. The number of cows and heifers in-milk or in-calf was in June, 1895, 59,400, being 4,876 ($= 8\cdot96$ per cent.) more than in 1875. In June, 1892, the number of dairy cattle enumerated was 64,095, or 4,695 more than in 1895. Unfavourable seasons and low prices, both for dairy produce and beef, have tended to discourage cattle breeding; but it is probable that the additional security now afforded by recent legislation, by which imported store cattle can no longer be sold in the home markets for feeding purposes, will result in a much larger number of cattle being bred, especially cattle of the highest quality, which can alone compete successfully with foreign and colonial fat cattle, for which our ports are still open, and with imported beef.

The change that has taken place in the last twenty years in the live stock on agricultural holdings cannot be accurately measured by comparing the number of each description in each year; but if the total live weight of the stock be calculated, the increase—as measured by weight—will be shown. Estimating live stock of all ages at the following average weights per head, the result shows that in 1895, as compared with 1875, there was a total increase in weight of 175,950 cwt. (= 11·70 per cent.); but this fact does not sufficiently bring out the exact change that has taken place, inasmuch as the value per cwt. of horses greatly exceeds that of other kinds of live stock. Sheep, too, are worth more per cwt. than cattle, and cattle are worth more than pigs, but by valuing all the stock of 1875 at the same prices as the stock of 1895 (though the prices in 1875 were much higher), the exact change that has taken place can be fully realised. It may be well to show in detail the change resulting by each method of comparison.

ESTIMATED LIVE WEIGHT.

	Horses.	Cattle.	Sheep.	Pigs.	Total.
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
1875	214,800	859,200	372,310	56,870	1,502,680
1895	264,010	989,570	343,490	81,850	1,678,630

Increase in Total Live Weight of Stock, 175,950 cwt. = 11·70 per cent.

Live Stock of all Ages.	Estimated Annual Value Per Head in 1895.	Value in 1875, based on the Prices of 1895.	Estimated Value, 1895.
	£ s. d.	£	£
Horses	20 0 0	571,480	704,100
Cattle	9 7 6	1,342,500	1,546,200
Sheep	1 7 6	682,575	629,730
Pigs	1 10 0	85,310	122,340
		2,681,865	3,002,370

Increase, 1895 320,503l. = 11·95 per cent.

As compared with 1875, the position as regards live stock may be regarded as having improved to the extent of nearly 12 per cent.

Applying the same test to live stock on agricultural holdings in the United Kingdom and in England respectively, and com-

paring the result with the figures for Shropshire, it will be seen that greater progress has been made in Shropshire than has been the case either in the United Kingdom or in England. This, no doubt, to some extent, accounts for the fact that the depression in Shropshire, though it has been and still is severe, is less serious than in many other parts of the kingdom, particularly where live stock has not been the sheet anchor.

LIVE WEIGHT OF STOCK.

Year.	United Kingdom.	England.	Shropshire.
	Cwts.	Cwts.	Cwts.
1875	103,659,200	49,729,300	1,502,685
1895	106,931,500	50,477,900	1,678,685

INCREASE IN WEIGHT.

1895	{ 3,272,300 3 per cent.	748,600 1½ per cent.	175,985 11½ per cent.
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VALUE OF LIVE STOCK.

Year.	—	Horses.	Cattle.	Sheep.	Pigs.
		£	£	£	£
1875	United Kingdom	37,517,000	95,275,300	46,051,400	5,242,885
1895	" "	42,244,200	100,812,300	40,940,400	6,358,885
1875	England ..	20,635,520	39,548,155	26,282,620	2,813,000
1895	" ..	23,694,940	41,930,295	19,446,865	3,706,885
1875	Shropshire ..	571,480	1,342,500	682,575	85,885
1895	" ..	704,100	1,546,200	629,730	122,885

ESTIMATED VALUE OF HORSES, CATTLE, SHEEP, AND PIGS, ON AGRICULTURAL HOLDINGS, 1895—VALUE OF HORSES, CATTLE, SHEEP, AND PIGS IN 1875 BASED ON THE PRICES OF 1895.

Year.	United Kingdom.	England.	Shropshire.
	£	£	£
1875	184,086,500	89,279,330	2,681,865
1895	190,355,200	88,778,730	3,002,370
Increase in 1895 ..	6,268,700	..	320,505
Decrease in 1895 ..	..	500,600	..

United Kingdom	Increase in quantity,	3·40 per cent.
England	Decrease	" 0·56 "
Shropshire	Increase	" 11·95 "

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ESTIMATED VALUE OF LIVE STOCK (HORSES, CATTLE, SHEEP, PIGS, AND POULTRY).

Year.	United Kingdom.	England.	Shropshire.
.. .. .	£ 240,775,000	£ 117,426,000	£ 3,521,750
.. .. .	193,765,000	93,766,000	3,074,650
ESTIMATED DECREASE IN VALUE.			
.. .. .	47,000,000	23,660,000	447,000

—	Estimated Decrease.	Estimated Decrease per Acre.
	Per cent.	£ s. d.
United Kingdom	19·50	1 0 9
England	20·15	1 2 3
Shropshire	12·70	0 15 6

ESTIMATED WEIGHT OF LIVE STOCK PER ACRE.

—	1875.	1895.
	Cwts.	Cwts.
United Kingdom	2·19	2·23
England	2·07	2·03
Shropshire	2·16	2·34

ESTIMATED VALUE OF HORSES, CATTLE, SHEEP, PIGS, AND POULTRY, ON AGRICULTURAL HOLDINGS, PER ACRE.

—	1875.	1895.
	£ s. d.	£ s. d.
United Kingdom	5 1 9	4 1 0
England	4 17 9	3 15 6
Shropshire	5 1 2	4 5 8

EAT, DAIRY PRODUCE, WOOL, POULTRY AND EGGS, HORSES.

quantity of beef and veal, mutton and lamb, bacon and produced in Shropshire in the year 1895-96 was, approximately, 373,965 cwt., and in 1875-76, 354,855 cwt.; the decrease in 1895-96 being 19,110 cwt. (= 5·38 per cent.).

Value, 1,330,700*l.*, 1875-76; 1,028,400*l.*, 1895-96. Decrease in value in 1895-96, 302,300*l.* (= 22·72 per cent.). Wool, 1875-76, 21,075 cwt.; 1895-96, 18,385 cwt. Decrease in 1895-96, 2,690 cwt. (= 12½ per cent.). Value, 1875-76, 177,030*l.*; 1895-96, 77,200*l.* Decrease in value, nearly 100,000*l.* (= 56½ per cent.). The decrease in value per lb. was nearly 50 per cent. The total value of fat stock marketed or killed for home use (exclusive of poultry and eggs) decreased 22·72 per cent., and the total value of fat stock and wool, 26½ per cent. (402,125*l.*). The average value of fat stock per cwt. (official given in) decreased 26½ per cent., viz. from 75*s.* per cwt. to 55*s.* The quantity of poultry and eggs is taken at 5 lbs. per acre for each year. The number of horses sold is estimated at 7 per cent. of the number on hand in 1874 and 1894 respectively. This does not include horses sold from one farmer to another in the same county, but only horses sold off the agricultural holdings within the county for use in the towns and in other counties, or for exportation. In June, 1894, the number of horses on agricultural holdings was 35,186. Assuming that of this number, 3¼ per cent. were lost by disease or accident, there remains 34,040 to be accounted for. In June, 1895, there were 31,590 horses on agricultural holdings over twelve months old; this points to 2,450 having left the farms in the county = 6·96 per cent. As the mortality is based on the whole number of horses on hand in June, 1894, whereas part of the number left the farms month by month, it may safely be taken that 7 per cent. were marketed in towns, or outside the county. The horses sold off farms are valued at 35*l.* for 1875-76, and at 32*l.* 10*s.* for 1895-96; the decline in price per head being only 7½ per cent. Well-bred horses are nearly, if not quite, as valuable as they were twenty years ago. In horses of inferior quality, which are brought into direct competition with imported horses, the fall in value is of a marked character. Weight-carrying Hunters and the best class of Hackneys have still a monopoly in the home markets, and the highest class of agricultural horses suitable for town and railway work possess powers of endurance and power unequalled by any that are brought into competition with them from abroad. The number of horses sold off farms in Shropshire—estimated at 7 per cent.—was, 1875-76, 2,000; 1895-96, 2,464 (based on the 'Returns' for 1894 and 1895; the figures for 1896 not being yet available); the increase in the number sold = 23½ per cent.

The number of cows and heifers in-milk or in-calf was, in June, 1875, 54,524; and in June, 1895, 59,406; the increase in number being 4,882 (= 8·96 per cent.). The average quantity of milk yielded per head is estimated as having been 37½ cwt.

The new milk yielded is estimated to have realised, in one form or other, 7s. 6d. per cwt. in 1875-76, and 6s. per cwt. in 1895-96; that portion of the value that was recovered through the stock is not included in the valuation of the dairy produce. The estimated total value of the milk yielded was for

1875-76	..	..	..	..	..	766,700
1895-96	..	..	..	..	..	668,300
Reduction in value						98,400 (=12·83 per cent.).

Estimated average value per cow for milk yielded :

						£	s.	d.
1875-76	..	..	..	..	..	14	1	8
1895-96	..	..	..	..	..	11	5	0
Reduction per head						2	16	8 (=20 per cent.).

The reduction of 1s. 6d. per cwt. in the value of the milk at the farm = 20 per cent. ; 7s. 6d. per cwt., the price for 1875-76 = about 8½d. per imperial gallon : 6s. per cwt., the price for 1895-96 = about 6½d. per imperial gallon. The decrease in the value of milk yielded, of 20 per cent., compares favourably with the fall in the value of fat stock, viz. 26¾ per cent. ; but butter has fallen, on the average, to the same extent as fat stock, viz. 26¾ per cent. The highest quality of butter still commands a remunerative price ; but the proportion of this quality marketed is lamentably small. One week the supply may be excellent in flavour and in make ; but only here and there are dairies met with where the quality is constantly good. If care were taken to thoroughly clean and closely top the roots supplied to the cows, and to pulp the roots and mix them with chopped hay and oat straw—the mixture being allowed to rise in temperature and afterwards cool before being served—the objectionable turnip-flavour that characterises so much of the winter butter marketed in Shropshire and elsewhere would, to a large extent, be eliminated. It would entirely disappear if the cream were heated carefully.

The value at the farm of new milk sold has fallen from an average of 8s. per cwt. in 1875-76 to 6s. 6d. per cwt. in 1895-96 ; the reduction in value = 18¾ per cent.

Of the total number of dairy cattle, it is estimated that 30 per cent. are kept for the production of milk for sale and for farm households ; 30 per cent. for butter-making ; 75 per cent. of the sweet skim milk being fed to young stock, in addition to 25 per cent. of the new milk yielded. About 15 per cent. of the cows are kept for cheese-making, the whey being used as food for pigs.

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The estimated value of dairy produce sold or used in farm households was as follows:—

1875-76	..	..	..	..	..	£	545,715
1895-96	..	..	..	..	..	£	466,470

Reduction in value .. 79,245 (= 14½ per cent.).

Estimated value of farm produce sold or consumed in farm households.

GRAIN, HAY, STRAW, VEGETABLES, AND FRUIT.

1875-76	..	..	..	..	..	£	1,280,000
1895-96	..	..	..	..	..	£	460,000

Reduction in value .. 820,000 (= 64 per cent.).

LIVE STOCK—ESTIMATED GROSS REVENUE.

	1875-76.	1895-96.
By Fat Stock, Poultry, and Eggs ..	£ 1,455,000	£ 1,140,550
„ Dairy Produce	545,700	466,450
„ Wool	177,000	77,200
„ Horses sold off Farms	70,000	80,000
	2,247,700	1,764,200

Estimated reduction in 1895-96 483,500l. = 21½ per cent.

ESTIMATED GROSS REVENUE.

	1875-76.	1895-96.
By Live Stock	£ 2,247,700	£ 1,764,200
„ Farm Produce	1,280,000	460,000
	3,527,700	2,224,200

Reduction 1,303,500l. (= 36·95 per cent.).

In connection with this statement there are other factors that require consideration, that are pointed out in the remarks made under the head of crops.

ESTIMATED GROSS REVENUE.

	1875-76.	1895-96.
By Live Stock	Per cent. 63·72	Per cent. 79·32
„ Farm Produce	36·28	20·68
	100	100

Of the gross revenue about 16 per cent. more is now obtained from live stock than was obtained twenty years ago, and, consequently, about 16 per cent. less from farm produce, grain, hay, &c. This fact points to the vastly-increased importance that live stock now holds, as compared with other sources of farm revenue, so far as Shropshire farmers are concerned, and indeed the majority of farmers throughout the United Kingdom. The capital of Shropshire farmers has, undoubtedly, been seriously diminished in the last twenty years, more especially since 1879; but their loss would have been much greater had they relied upon grain as their sheet anchor instead of live stock.

Of the total capital invested in live stock and poultry in Shropshire, in 1895 = 3,074,650*l.*, about $22\frac{9}{10}$ per cent. was invested in horses; $50\frac{3}{10}$ per cent. in cattle; $20\frac{1}{2}$ per cent. in sheep; 4 per cent. in pigs; and $2\frac{3}{10}$ per cent. in poultry.

In 1875, the population of Shropshire was 248,000; it is now about 232,000. In 1875, the wholesale value of flour, meat, dairy produce, potatoes, and other farm produce required for food, per head of the population, was about 8*l.* 15*s.* It is now about 5*l.* 5*s.*, or 3*l.* 10*s.* per head less (= 40 per cent.), based on the home prices; but, to a considerable extent, foreign and colonial farm produce, especially in the urban districts, takes the place of home-grown produce.

248,000 at 8 <i>l.</i> 15 <i>s.</i>	..	=	2,170,000 <i>l.</i>
232,000 at 5 <i>l.</i> 5 <i>s.</i>	..	=	1,218,000 <i>l.</i>

Reduction .. 952,000*l.* (= 43·87 per cent.).

Had the population not been reduced the outlay would have compared as follows:—

248,000 at 8 <i>l.</i> 15 <i>s.</i>	..	=	2,170,000 <i>l.</i>
248,000 at 5 <i>l.</i> 5 <i>s.</i>	..	=	1,302,000 <i>l.</i>

Reduction .. 868,000*l.* (= 40 per cent.).

The estimated gross farm revenue in 1875–76 was 3,527,700*l.*; in 1895–96, 2,224,200*l.*

In 1875–76, the consumption of flour in Shropshire required 1,500,000 bushels of wheat. The quantity of wheat grown in the county and available for milling purposes was 2,000,000 bushels (60 lbs. per bushel); there was a surplus therefore of 500,000 bushels (= 25 per cent.). The consumption of flour in 1895–96 required about 1,400,000 bushels of wheat. The quantity of wheat grown in the county and available for milling purposes was 577,000 bushels, being 823,000 bushels (= $58\frac{1}{2}$ per cent.) less than required.

The average reduction in the retail prices of meat, bread, dairy

produce, and potatoes in 1895, as compared with 1875, was about 25 per cent. The non-agricultural public are enjoying substantial benefits from the Free Trade policy that prevails, and that is likely to continue. Any relief therefore required by a depressed industry supplying the first necessities of life should be cheerfully accorded.

A valuable and highly-interesting account of "The Agriculture of Shropshire," by Mr. Henry Tanner, was published in the Royal Agricultural Society's 'Journal' in 1858. The geological features of the county are there described, and do not require therefore to be touched upon in this article. The description given by Mr. Tanner of the mode of cultivation and farm management generally holds good still, to a large extent, and it is unnecessary to go over the same ground again.

The farm horses are active and powerful, and are well adapted for their work.

Hereford cattle are largely bred for feeding purposes, and Shorthorns and cross-bred cattle both for dairying and for feeding. For the economical production of excellent grass-fed beef the Hereford is unsurpassed by any other breed. In the hill districts Clun Forest sheep are largely bred. The quality of the mutton produced by Clun wethers when three years old is unsurpassed. The ewes are hardy and very prolific; after the second or third crop of lambs the ewes are sold in large numbers to breed cross-bred lambs in distant counties, where the lambs can fatten early in the season. The Shropshire breed is the one that is most largely kept. In the river valleys, and on the hill-sides, indeed, wherever grass will grow, this breed is found to thrive. The capacity of the Shropshire to thrive under widely different circumstances of soil, climate, &c., especially qualifies it for the improvement of other breeds in the Colonies and in many foreign countries. A concise and valuable "History of Shropshire Sheep" has recently been written by Mr. Alfred Mansell, of Shrewsbury, which may, with advantage, be referred to by readers of the 'Journal' who take an interest in the subject. That Shropshire has long been celebrated for its wool is proved by the fact that as far back as the fourteenth century Shropshire wool was regarded as unequalled in quality, and then commanded the highest price in the market. A good fleece is still a marked characteristic of the Shropshire breed. The average weight of the fleece, which a hundred years ago was only $2\frac{1}{2}$ lbs., is now fully 7 lbs.; but whilst a large increase has taken place in the average weight of wool yielded, Shropshire breeders have rightly directed their attention chiefly to the breeding of sheep, qualified at an early age to produce 20 lbs. per quarter of first-class mutton, rich in flavour, with a relatively small propor-

tion of bone, and a large proportion of lean flesh. By persevering exertions, sound judgment, and unwearied patience, they have abundantly succeeded in this direction. Since Mr. Tanner's Report of the Agriculture of Shropshire a marked increase has taken place in the prices realised for high-class rams, prices having since ranged from 150 to 250 guineas. Ewes have been sold for exportation up to 40*l.*, and ewe lambs have been sold up to 15 guineas. At the Annual Home Sales, in the stronghold of the breed, the best pens of ewes offered usually realise from 5 to 10 guineas; ewes of good pedigree, and suitable for founding a flock, can be bought at from 3 to 5 guineas. As compared with a flock of unregistered sheep it requires 50 per cent. more capital to start a pure bred Shropshire flock of registered pedigree, but the extra initial outlay, if judiciously made and followed up by good management, can be safely counted upon to yield a handsome return on the capital invested. In proof of the prolific character of the Shropshire breed, it may be mentioned that 11,666 ewes have this year reared 168 lambs per 100 ewes; 150 lambs per 100 ewes is the ordinary average; the lambs are well nourished. Hardy in constitution, docile in character, and an economical producer of mutton and wool of the best quality, and thriving satisfactorily both on the highest pastures and in the dales, it may be truly said that the Shropshire sheep has a golden hoof. It has undoubtedly been by sticking to their flocks that Shropshire farmers have hitherto succeeded in weathering the storm. Success in farming is likely in the future even more than in the past to depend on the management of herd and flock. So far as sheep are concerned, great and continuous progress has been made in Shropshire; but although there are many grand herds in the county, both of Hereford and Shorthorn cattle, and though a large number of well-bred bullocks are reared and fattened in the county, it must be admitted that the improvement in cattle has hitherto failed to keep pace with the remarkable progress that has been effected in sheep-breeding. Fully one-third of the cattle bred are distinguished by their mediocrity; an equal proportion may be regarded as being first-class; the remainder fall short of the standard that should be reached. It has been shown that, notwithstanding the reduction in rent, the lower cost of feeding-stuffs and manures, and the reduction in expenses in other ways that have taken place, the nett income is still on the average about 15*s.* per acre less than was enjoyed twenty years ago. The reduction of 1*s.* per acre in rates which, after a hard fight in the House of Commons, was conceded to farmers, is not to be despised, but self-help can alone appreciably effect the change in the condition of the farming industry that is so greatly

to be desired, and which, in the writer's opinion, may be reasonably hoped for.

In the improvement of both store cattle and dairy cattle, a grand opportunity of increasing the credit side of the farm account presents itself. The difference in market value between an 8 cwt. well-bred bullock and a coarsely made animal is fully 12s. 6d. per cwt. live weight, or 5l. per head. The former being relatively a smaller consumer, can be more economically reared than a badly-bred, coarse bullock. Not only is the cost of rearing, and especially of fattening a well-bred animal less, but when finally disposed of by the breeder the amount realised is larger by 35 to 40 per cent. if sold in store condition, and by 25 to 30 per cent. if sold fat. The difference in value depends on the degree of inferiority, but even when cattle realise as stores 5s. per cwt. below the market value of animals of the best class, there is a difference of 2l. per head in the case of 8 cwt. cattle.

Well bred and carefully selected Shorthorn Dairy Cattle yield, under good management, 52½ cwt. of milk per head, while the ordinary average of the county is about 37½ cwt. The calves from the former are worth at least 12s. 6d. per head more than from the ordinary run of dairy cows. The difference in the value of the annual produce is about 5l., which yields a good return for the additional capital and care. In horses the difference is even more striking.

Pigs are useful animals, and live to some extent on food that would otherwise be wasted. It is an old saying that "pigs are all muck or all money"; there is nothing in the present state of the markets to encourage increased attention to their breeding, so far as numbers are concerned, but as regards quality there is room for improvement. A rapid rise in value may take place when once swine-fever is stamped out.

In the breeding of poultry there is room for extension and increased care. Feeding barley, if utilised as food for poultry of the right class, can be made to realise a much better return than can be obtained in the corn markets. Pedigree in corn is just as important as pedigree in live stock. "What a man sows that shall he also reap." By using seed-corn of the best quality obtainable, the yield of grain, without any additional expense in either labour or manure, is frequently 20 to 25 per cent. larger on the same class of land as where unselected seed has been used. It is the same with other farm crops. Much loss may be avoided by utilising to a greater extent the chemical and analytical facilities afforded by the Bath and West and Southern Counties Society and other agricultural Societies, and by the employment of skilled and zealous shepherds and herdsmen,

and industrious and efficient labourers. But when all has been done in the way of self-help that it is possible for a man to do, it will still be difficult till prices improve to put anything by for a rainy day. If, however, a loss of capital can be avoided, in face of the difficulties to be contended with, the future may be looked forward to hopefully. "It is a long lane that has no turning."

Farming now, more than ever, requires all the intelligence and skill that can be brought to bear upon it. Industry and skill, sustained by capital and aided by science, are certain in the long run to have their reward.

IX.—*Cider Orchards: How to Cultivate them.*

By F. W. RICH, F.R.H.S.

WITH the decrease in the value of arable land, owing to the depressed state of the corn trade, and a corresponding decrease in the value of pasture land, consequent on the foreign competition in meat and cheese, tenant-farmers are sorely puzzled to know how best to make "both ends meet." Fruit-farming has been suggested as a remedy, and, whilst in many instances satisfactory returns are recorded, it is an indisputable fact that, in the majority of cases, the effort has been barely remunerative. And why? Mainly, for the simple reason that those who would realise a livelihood by the cultivation of fruit have not selected the class of tree that would be likely to yield them a profit. The same argument will apply with equal, if not greater, force to cider fruit-growing; cider-makers must be as particular in the selection of their fruit as market-gardeners are learning to be with respect to table fruit.

It is often thought that orchard ground may be used for seeding as well as for fruit-growing; but this must mainly depend upon the manner in which the surface is kept. If mown, the pasturage should be well covered with thoroughly rotten farmyard manure, in preference to artificials; if fed, sheep, pigs, and poultry (not horned stock) are most suitable.

In the formation of new orchards, the first thing necessary is the selection of a good piece of well-drained land. Drainage is highly essential for young trees, inasmuch as moist land has a direct tendency to induce lichen-crust, moss, &c. These are little else than direct diseases of the sapling, and in the end will materially injure its growth and harbour various insects

which infest uncultivated fruit-trees. The cider made on light and thin soil is not nearly so good as that made on loam with a clay foundation, or with a lighter stratum for drainage. A new orchard should be sheltered by the planting of poplar, withy, or some other quick-growing trees, on the west and north-west sides, so as to prevent the wind damaging the young fruit-trees. Cider-fruit trees properly sheltered will thrive much better on a hillside than on a plain, and my experience is that far better cider can be made from orchards on the north and west sides than from those on the south and east.

Having selected the best site, the next thing is to procure thoroughly good and extra strong standard trees, with at least 6 feet of stem, good roots and heads, and clean bodies. There are many who make a very great mistake by planting trees too deep and in an unsuitable subsoil. This should be carefully avoided. I find the nearer the roots are to the surface the better they thrive, and the best depth to plant young trees is from 4 to 8 inches, according to the soil. All the small and leading fibres from the roots should be well pulled up and placed in a proper position while the hole is being filled, so that the roots may be as nearly as possible equal distances apart.

Standard trees in a young orchard should be planted from 24 feet to 30 feet apart. They should, as soon as they are planted, be well fenced and protected from cattle and ground game. In the selection of stock-trees, grave errors are too frequently made because growers prefer, in a large number of instances, to purchase those already grafted with named varieties, as most of the best sorts of cider-fruit trees are slow growers.

Some of the best kinds of fruit to grow for cider-making purposes are King of Pippins, Court of Wick, Court Royal (these three kinds may also be utilised as market fruit), Kingston Black, Royal Jerseys, Hangdown, Foxwhelp (Old), Red Cluster, Red Streak, Chisel Jersey, Broad Leaved Hereford, Strawberry Norman, and Morris's Never Blights. Many of the above-named sorts, I am willing to admit, are slow growers and exceedingly delicate; hence, really good strong standards of these kinds are difficult to procure. I would, however, strongly recommend bough-grafting in good and strong young trees, and that subsequently they be kept well pruned and manured. In the district of which I have experience, it is the custom to plant standard trees of a quick-growing sort, with good strong stems, and these, after having been planted for a couple of years, thus becoming thoroughly rooted, are bough-grafted—*i.e.* a graft of the particular kind of fruit required is inserted in each bough about

inches from the formation of the head. It is well to bear in mind that, after grafting, it is necessary to cut off all buds and young shoots which make their appearance under the point of grafting, and thus force the whole sap of the tree into the graft. The best time of the year for bough-grafting is the middle of April, and the cuttings for grafts should be taken only from healthy trees, free from the least indication of canker or any other form of disease. Of course, skilful grafting is a material aid to the development of the grafts and to early fruit-production. As the result of my experience, I have no hesitation in saying that the trees of the Morgan Sweet—a very early market apple—are the strongest, straightest, and fastest growers, and therefore the very best for bough-grafting with other kinds.

In the production of good stock, or saplings, tender care and skilful treatment will always tell in the long run. After successful grafting, pruning, and manuring, apple-trees may be said to be able to take care of themselves. But everything depends upon the grafting and the treatment of the trees at that period. Therefore I would urge upon all who would be successful apple-growers to make quite certain that their young stock is of the best possible quality, and also that it is manipulated with skill.

A few words in conclusion with regard to old orchards. In Somerset, as in the other apple-producing counties, from fifty to seventy-five per cent. of the trees now constituting such orchards are literally worn out, whilst but few of the remainder will produce fruit that can be successfully utilised for the making of good, and especially sweet, cider. The taste for sour cider is disappearing, and one is led to inquire what can best be done with old orchards, so that their produce may be suitable for the production of a beverage that will be acceptable to present tastes. Trees which still show a fair degree of vigour and have a smooth skin, may be utilised for grafting purposes; but those which give indication that their vigour, so far as growth is concerned, has gone, or is even on the wane, it is best to root up. I would exterminate all knotty trees. Such trees as are allowed to remain in an old orchard, after being grafted, should be skilfully pruned and liberally manured. At the same time, it is well to bear in mind that these trees are rapidly attaining the age when their fruit-producing qualities must cease. I would, therefore, strongly urge the planting of young trees between the old ones. If carefully grafted and attended to, they will in time form the fruit-producing portion of the orchard, when the old trees may be discarded. If the whole of the trees forming an orchard are condemned on account

of old age, then I say uproot them and utilise the space they have occupied for other than orchard purposes, inasmuch as young trees will thrive much faster and better if planted in new soil.

X.—Investigations into the Manufacture of Cider. Report for 1896. By F. J. LLOYD, F.C.S., F.I.C.

Most people may have noticed that, as a rule, an exceptionally prolific year of any one fruit, like the apple, is followed by a season of exceptional scarcity. The apple crop of 1896 confirmed this general rule, for while 1895 was a most prolific year, in 1896 many cider-makers found a difficulty in obtaining sufficient apples to make any cider at all. Mr. Neville Grenville, however, was fortunately able to obtain sufficient for the continuance of the investigations on cider-making, and the season was especially suited to the carrying on of experiments to determine how far in a season when the apple crop is small the yield of the apples may be increased by the production of "small" cider. In reporting upon the results of these investigations it will be best to follow the order which has been adopted in the past.

THE INFLUENCE OF SEASON.

In the following table will be found the principal factors for the season of 1896 prior to the gathering of the apple crop.

AIR TEMPERATURE AND RAINFALL, 1896. AVERAGE OF HEREFORD AND CULLOMPTON.

MONTH.	Air Temperature.		Rainfall.	
	Min. and Max. Combined.	Difference from Average.	Total fall in Month.	Difference from Average.
April	49·7	+2·4	·58	-1·46
May	55·6	+3·3	·09	-2·01
June	61·6	+3·4	2·03	-0·10
July	61·9	+0·9	1·37	-1·38
August	58·9	-1·5	1·78	-0·88
September	57·0*	-0·2*	4·91	+2·01
October	45·3	-2·8	2·53	-0·89

* Obtained at Cullompton only.

BRIGHT SUNSHINE RECORD AT CULLOMPTON, 1896.

MONTH.	No. of Hours recorded.	Difference from Average.	Percentage of possible Duration.	Difference from Average.
.. .. .	163·5	+ 6·2	40	+ 2
.. .. .	280·7	+82·0	59	+17
.. .. .	215·2	+14·7	44	+ 3
.. .. .	193·7	+19·6	40	+ 4
.. .. .	184·2	+ 6·0	41	+ 1
ber	97·4	-42·6	26	-11
.. .. .	99·3	+ 4·8	30	+ 1

be seen that the year was characterised by bright sun-
a high temperature, and an exceptionally small rainfall.
fects of these climatic conditions on the apples and on the
ave been numerous and important.

re was only a small apple crop. How great was the
nce between 1895 and 1896 may be better gauged by the
at in 1896 only 1,000 gallons of cider were made at But-
while in 1895 the apples of the same orchards yielded
9,000 gallons.

season was an early one, that is to say, the apples ripened
than usual. Analyses of apples picked from the same
vere made from time to time, in order to watch the progress
ning. The result of these analyses showed that it would
essary to gather the apples some weeks earlier than usual,
it is better to postpone cider-making so far as possible
oderately cool weather sets in, the apples were carefully
away in a loft, which is preferable, where such a course is
le, to "hurdle stores." Cider-making did not commence
he 22nd of October.

other result of the season was that the apples yielded less
per 1,000 lbs. weight than was obtained in 1895. Thus
5, 1,000 lbs. of apples yielded 650 lbs. of juice, while in
from the same weight of apples, only 615 lbs. of juice
obtained.

if the juice was less in volume it was of better quality,
following table shows:—

AVERAGE COMPOSITION OF JUICE FROM PRESS.

Year.	No. of Samples.	Solids.	Acid.
1893	6	14·40	·63
1894	11	11·14	·60
1895	13	12·24	·46
1896	5	14·02	·40

It will be seen that the composition of the juice was nearly as good as in 1893 with respect to total solids, and was better than in 1893 in not being quite so acid. How much better it was in 1896 than in 1895 may be estimated by comparing the average specific gravity of the apple-juice from each "cheese" made in these years. This in 1895 was 1.0534, in 1896 it was 1.0625. In other words, in 1895 the juice contained about 11 per cent. of fermentable sugar, capable of yielding $5\frac{1}{2}$ per cent. of alcohol; in 1896 it contained about 13 per cent. fermentable sugar, capable of yielding $6\frac{1}{2}$ per cent. of alcohol.

ANALYSES OF APPLES (JUICE).

In the Report for 1895 analyses were given of the juice obtained from eighty varieties of apples which are grown for cider-making. As this work appeared to be highly appreciated by cider-makers, and at the same time is likely to be of practical value as indicating what varieties of cider-fruit are most suitable for cultivation, it has been continued, and in Appendix A. will be found the composition of the juice of thirty varieties, mostly different from those analysed last year. So far as time may permit, I shall hope to continue this work each year, and it would be helpful if the senders of apples would endeavour to take a sample each year *from the same tree*, and notify the fact when forwarding the apples. In addition to the information given in the former table, the average weight of each apple has this year been estimated. It is hoped that it may some day be possible to submit all these apples to a uniform and standard pressure, and to include in the table the volume of juice so obtained.

A careful study of these analyses, and comparison with those obtained in 1895, reveals the important fact that in a few instances, where the same variety of apple has been sent for analysis each year, the results in 1896 do not accord with those in 1895. In some cases the apples which gave excellent results in 1895 gave only fairly good results in 1896; while, on the other hand, some which were more or less inferior in quality in 1895 gave good results in 1896. Does the season affect different sorts of apples in different ways? It would appear so, just as one season is favourable to one particular kind of grass, while another season is more favourable to a different kind of grass. But before drawing any definite conclusion upon this point we must remember that the nomenclature of apples is very loose and unsatisfactory, that several quite distinct varieties are all called by one name, while frequently apples which bear different names are undoubtedly similar, if not one and the same variety.

THE MANIPULATION OF THE APPLES, &c.

It will be remembered that in 1895 experiments were made to ascertain the effect of allowing the apples, after being ground, to stand twenty-four hours before being pressed. The results obtained were twofold. The resulting juice was more highly coloured, and contained less tannin. These ciders have now fully fermented and ripened, and it is found that the cider made by pressing the pomace as soon as it is ground is far superior to that made from the same kind of apples which after being ground stood twenty-four hours before being pressed.

Keeping.—A similar experience was obtained to that of 1895. A spell of cold weather lowered the temperature of the juice, so that the beneficial effect of keeping was not obtained. But little fermentation took place, and the suspended pomace would not rise to form a head. The necessity of keeping the keeves at a moderate and uniform temperature is so evident that, wherever possible, in my opinion a small keeping room should be provided, containing a slow combustion stove by which to regulate the temperature. Such a room will, I trust, be provided at Butleigh for next season's experiments, when an endeavour will be made to determine the best keeping temperature. Meantime, so far as can be judged, a temperature of 55° Fahr. appears to give satisfactory results.

The object of keeping is to clear the juice; therefore it is evident that the best guide as to whether and when keeping has proceeded far enough is the condition of the juice. Now it was not possible to see this except after removing each "head," while the proper moment might arrive before the "head" was removed. A wooden tap was therefore placed in the centre of each keeve. This enabled a tumblerful of the juice to be removed at regular intervals without disturbing the head or necessitating its being first skimmed off, and from the condition of this sample it was easy to determine when the juice might be racked into the barrels.

In drawing off from the keeve, it is most necessary to avoid disturbing the sediment. This may be accomplished by inserting into the end of the indiarubber hose which dips into the keeve one arm of a piece of tubing bent in the shape of a U. The juice is then *sucked downwards* into the other arm, whereas if the tube is merely dipped into the keeve—say, within 6 inches of the bottom—and the juice sucked upwards, the current of liquid sweeping over the surface of the deposited pomace will gradually disturb it and cause it to be drawn up into the tube, thereby partly destroying the great advantage to be gained by keeping.

The juice is drawn from the keeves either by means of rotary pump, described in a previous Report, or more frequently by mere syphon action (the keeves being in an upper room) into the barrels in the cider cellar. These have the safety bung described in a previous Report—inserted, and the juice is allowed to ferment. The progress of fermentation is watched, clearness of the juice and its specific gravity being estimated at least once a week.

Racking.—So soon as the juice reached a specific gravity 1.025, or sooner if it had cleared, it was drawn off carefully into a clean barrel. As in drawing off from the keeves, so also when racking, it is most important not to disturb the sediment on bottom of the cask. Unfortunately, the bent tube employed for removing the juice from the keeve cannot be inserted into the bung hole of a barrel, so that it is necessary to employ some other means. We used a metal tube closed at the end, but having numerous holes drilled in the sides about two to four inches from the closed end. A still better arrangement would be to have the end of the tube dipping into a long cup-shaped vessel so as to ensure downward suction of the juice into the vessel during the time of racking.

The reason why the juice was racked was mainly to enable filtration to be subsequently carried out with greater ease. Although with Lumley's filter it is quite possible to clear the thickest cider, yet the filter gradually becomes clogged, and at a while needs to be cleaned out. This operation naturally occupies time and gives trouble, and in order to avoid this racking was resorted to. The results obtained were most satisfactory. After racking, the juice appears to clarify more easily, though fermentation is not stopped. Before racking, the solid matter appears to be kept in suspension by the carbonic acid gas which becomes attached to it. This is partly dissipated by racking, with the result that the particles now subside. Subsequent fermentation is slower, and though enough carbonic acid is produced to saturate the liquid, yet it does not again raise the deposited matter for some little time. A safety bung is inserted in the cask and the juice carefully watched. So soon as it attains a specific gravity of 1.020 it is filtered. The cider can then be found to filter with ease, and much larger quantities can be filtered before it is necessary to clean out the filter. Care, however, must be taken not to allow too much time to elapse between racking and filtering, otherwise the production of gas will be sufficient to again raise the deposited material; the time to be allowed will depend mainly on temperature.

Filtering.—The introduction of the filter was naturally loo

upon by old and experienced cider-makers as a rash scientific experiment. They had made cider, and good cider too, all their lives "without that thing." Many were the ominous shakes of the head at each further step which the experiments took. At first it was going to take out of the cider all the "body" (whatever this may mean, for each person gives a different definition of the word), and great was the surprise, when it was found that the filter did not have this effect. Next, it was declared that all the flavour would be removed. Let me narrate one of many similar instances. Half-a-dozen tenant farmers had come to Butleigh to see the experiments. Filtering was proceeding, and great was their surprise to see the cloudy cider passing into the filter coming out at the other side a bright and clear sherry-coloured liquid. "Now," said Mr. Neville Grenville, "taste the cider that is going into the filter, and say what you think it is worth a gallon." A consensus of opinion was soon obtained. "Now," said he, "taste the cider coming away from the filter." This was done, and "Why, it's worth 2*d.* a gallon more," came simultaneously from these hard-to-be-convinced Somerset farmers.

So far, so good. When, however, in the beginning of 1896, it was suggested that perhaps there would be a poor apple crop in the autumn, so that it would be necessary to keep the cider of 1895 until 1897, and that to do this it had better be filtered, it was at once told, "You will spoil the whole lot, and the tuff will have to be thrown away." "No, no," said the bailiff, "filter two or three barrels and be content to spoil those, we shall be able to spare them." But in spite of these evil prognostications, Mr. Neville Grenville decided, having faith in clean cider, that, so far as possible, the cider should be filtered and bunged down to keep to 1897. Some of the filtered cider has been tasted, and compared with that which was not filtered. The filtered cider is not *spoiled*, in fact, is excellent, and far better than the unfiltered. If, then, filtered cider in cask can go successfully through such a trying summer as 1896, there is little fear of its not keeping in an ordinary season. At any rate, all the cider made at Butleigh in 1896 is to be filtered for keeping.

Keeping the Cider.—I have noticed, when visiting various farmhouses, that much of the cider is stored in casks kept *upright*. As the result of both observation and experiment, I find that cider so stored does not keep so well as when the barrels are laid down. It is more liable to become acid in an upright barrel. Now cider does not become acid *unless air gets to it*. In fact, the longer cider is kept free from air, the less acid it becomes. This fact is important and may not be

generally known. It is most noticeable in bottled cider. For example, some cider containing 0·65 per cent. of acid was bottled for experimental purposes, and some months afterwards was again analysed. It then contained only 0·48 per cent. of acid (malic). In another instance, the juice contained, when bottled on the 24th January, 1896, 0·62 per cent. of acid; on 7th May, 1896, 0·53 per cent. of acid; on 2nd November, 1896, 0·45 per cent. of acid. Now, why does air get to it more readily when the barrel is upright? I think the reason is not difficult to find. Whenever a barrel is thoroughly cleaned the head is the part taken out. It may be replaced with skill, but is never so tight as it was originally. So long as it is wet it may be tight, but if allowed to get dry it opens more readily than any other part of the barrel. When the barrel is upright the head does get dry unless special means are taken to keep it moist. Then air reaches the cider, the alcohol undergoes a change, and is converted into acetic acid (vinegar). This is one cause of bad cider. Another is the custom of spiling casks, and now and again drawing a little out for friends to taste. The air gets in after each drop is drawn (unless the cider is highly carbonated, *i.e.* contains a quantity of gas), and vinegar fermentation starts.

Again, I have noticed that the spiles sometimes leak a little, the cider trickles down the barrel, and in hot weather you will find a slimy mass where the cider has run. This growth is injurious to the cider, and should never be allowed to exist in a cider cellar. Keep the outsides of the casks scrupulously free from it, for when next you draw a glass of cider from such a cask, the chances are that, in replacing the spile, you will introduce some of the slimy growth to carry on its destructive action inside the barrel.

The remedy for each of these evils is easy and obvious, it is to keep the barrels flat, and not to spile them until you wish to sell and are bound to sample.

Bottling.—It has been frequently pointed out in this and former Reports that cider when exposed to the air is liable to rapidly turn sour. From personal experience, I know that cider would be drunk in many London homes, were it not that the consumption being small, by the time a barrel is half emptied what remains is not fit to drink. Partly owing to this, partly to the fact that most bottled cider placed on the market, until quite recently, has been either too sweet, too gaseous, or too dear (as compared with cider in cask), the consumption of cider has been comparatively small. It, therefore, appeared to be desirable to experiment upon the effects of bottling, as I am quite certain that if cider is to become a popular

rink it will have to be supplied mainly in bottles. It would make this Report unnecessarily tedious to give in detail the results of all these experiments, for they have been numerous; but it may be worth while to draw attention to some points. Cider which is bottled almost invariably improves in flavour, by keeping, or perhaps, to state it more precisely, during the time it is in bottle. But even if bottled directly it comes from the filter, when it is absolutely clear and sparkling, and appears entirely free from any matter in suspension, yet in course of time a deposit forms in the bottle. This deposit, however, is small, and, if the bottles are kept upright for a day or two before being opened it sinks to the bottom, and the contents of the bottle may then be poured off without disturbing the sediment. The cider contains enough gas to be "bright," but is not effervescing. I tried the experiment, which was suggested to me, of leaving the bottles open for twelve hours after they were filled, and before corking, but the results proved conclusively that much better cider could be obtained by closing the bottles immediately after filling them.

If the cider is not clear when bottled, a copious deposit is formed. Fermentation proceeds, and sometimes the bottles burst, or the juice is so highly charged with gas that it is impossible to obtain the contents of the bottle without the whole of the sediment rising up.

The production of effervescing bottled cider appears therefore to be a branch of the industry which the ordinary farmer had better not attempt. On the other hand, the production of a good, still, fairly clear, and moderately dry bottled cider, for one's own consumption, or to supply to neighbours who are not cider makers, is not attended by much difficulty, especially where the use of a filter is procurable.

At present the cost of a good filter is prohibitive. By offering a Prize the Society might induce some engineers to turn their attention to the production of a cheap and efficient cider filter. Meantime large landlords might do worse than purchase a filter and let it out among their tenants. It could not fail to materially improve the character of the cider, whether it were retained in casks or transferred to bottles.

FERMENTATION.

The following table has been drawn up to show the progress of fermentation week by week in some cider which was regularly analysed :—

TABLE SHOWING PROGRESS OF FERMENTATION.

	Sp. Gr.	Total Solids.	Acid.	Alcohol.	Sugar.	Tannin.
		Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Juice	1·0581	14·30	·40	..	12·71	·178
1 week after ..	1·0537	12·98	·54	·81	10·96	·194
2 weeks " ..	1·0400	10·31	·54	2·05	8·39	·205
3 " " ..	1·0343	9·06	·58	2·56	7·19	·226
4 " " ..	1·0287	7·96	·61	3·18	5·97	·229
5 " " ..	1·0243	6·99	·62	3·63	5·29	·209
6 " " ..	1·0203	6·14	·64	4·06	4·27	·218
7 " " ..	1·0177	5·67	·66	4·35	3·68	·227

The above table is the average of six barrels which were all inoculated with pure yeast cultures, and so may be considered to be fermenting under the most regular conditions. By deducting the sugar present at the end of the seventh week from that present in the original juice, we find that 9·03 per cent. has been converted into alcohol, of which it has produced 4·35 per cent. Theoretically, according to Pasteur's work, the amount of alcohol should have been 4·38 per cent. in an absolutely pure fermentation. These results then are remarkably close to the theoretical yield.

In my last Report I drew attention to the fact that each year, as greater care was taken in the manufacture of the cider, the amount of alcohol actually produced approached nearer and nearer to the quantity that theoretically should be produced. I accounted for this fact by the assumption that "a purer fermentation has taken place each year." The above results, obtained with pure cultures of yeast, prove, I think, the correctness of this conclusion. But they also show that, by estimating the amount of alcohol produced from a given quantity of sugar, we have a means of determining whether a proper or improper fermentation has taken place in the apple-juice. The practical advantage of this should be enormous to cider-makers. For, while as yet it is most difficult to determine by microscopical examination the purity of the ferments present in the juice, it is not difficult for any well-trained, careful chemist to accurately estimate the amounts of sugar and alcohol present at various stages of the manufacture.

THE SUGAR AND ALCOHOL TABLE.

It was with considerable diffidence that I ventured in last year's Report to publish this table, which, as then stated, might in course of time have to be revised.

However, the results of this last season's work so closely confirm the table, that at present there seems no need to modify it. This may be seen by comparing the figures in the table with the average results obtained in 1896, as quoted above. Thus, the original gravity of these barrels in 1896 averaged 1·058, and the following figures show the actual results obtained, and for comparison the figures given in the table last year, as those which might be expected :—

Original Gravity 1·058.	At 1·040.		At 1·030.		At 1·020.	
	Sugar.	Alcohol.	Sugar.	Alcohol.	Sugar.	Alcohol.
By Table	8·1	2·0	5·7	3·2	3·8	4·3
Actually obtained ..	8·4	2·0	6·0	3·1	4·2	4·1

SMALL CIDER.

In my Report for 1894, I drew attention to the foreign custom of making small cider, and stated that a little had been made as an experiment at Butleigh. This was of excellent quality. In 1895, owing to the abundance of apples, there was no need for small cider; but in a year like the past, when apples are scarce, small cider can be made with advantage. Those who have not read my previous Reports may ask,—What is small cider? It is made by treating the pomace, after it comes from the press, with water, allowing it to soak and then repressing it.

The pomace as it comes from the press, however dry it may appear to the eye or touch, really contains a large quantity of liquid. Thus in three determinations of separate cheeses there were found 72 per cent., 75 per cent., and 74 per cent. of moisture respectively. This really means juice, and it is with the object of soaking out this juice that the pomace is treated with water. That the practice is worth carrying out may best be illustrated by quoting the average composition of the juice thus obtained.

Average percentage composition of 5 keeves of small cider :
sp. gr., 1·030; solids, 7·16; sugar, 5·66; acid, ·28; tannin, ·07.

As but little is known concerning the best conditions for producing small cider, experiments were made to determine the following points :—

- (a.) What quantity of water should be added to the pomace?
- (b.) Should the pomace be re-ground?
- (c.) For how long and at what temperature should the pomace soak?

(a.) What quantity of water should be added to the pomace? The first experiment was to compare the results of using a $\frac{1}{2}$ and $\frac{1}{3}$ the volume of the original juice, while subsequent experiments were made with varying quantities.

The average composition of the small cider obtained was as follows:—

Using	Sp. Gr.	Solids.	Sugar.	Acid.	Tar.
50 gallons of water = $\frac{1}{2}$ orig. vol.	1.0280	6.56	5.39	.28	.
36 " " = $\frac{1}{3}$ " "	1.0335	7.94	6.25	.30	.
25 " " = $\frac{1}{4}$ " "	1.0326	8.10	6.11	.36	.

These results indicate that one-half the volume of original juice is the best quantity of water to use for re-soaking pomace.

(b.) Should the pomace be re-ground? Experiments were first made by re-grinding the pomace before soaking. This was found to be a tedious task at best, and the attempt was sometimes fruitless. It was, however, comparatively easy to re-grind the pomace after it had been soaked with water. Experiments were made to compare the result of this re-grinding after soaking against merely soaking. So far, however, as could be judged from the few experiments made, the advantage of re-grinding is so small as not to compensate for the extra time and labour it involves.

(c.) For how long and at what temperature should the pomace be soaked? In attempting to answer this question, the results of the preceding experiments were taken as a guide, so that the pomace was treated with a volume of water equal to one-half the original volume of juice, and was not re-ground.

So far as the experiments went, it appeared that the pomace ought to soak for at least twenty-four hours.

Next as to temperature. Experiments could only be made at the ordinary temperature, and at one other standard. The heat selected for the few experiments that could be made, was the temperature naturally produced by adding nearly an equal volume of water to the pomace. The whole mass was thus raised to a temperature varying in different experiments from 117° to 120° Fahr., and it would fall in temperature during the twenty-four hours to 100° Fahr. The use of warm water had undoubtedly a beneficial effect of producing a richer juice than was obtained by the same volume of cold water. And it brought about other changes. When some of the small cider made

cold water was heated in a test-tube, a bulky precipitate was formed, apparently of some albuminous substance, which separated out, leaving a clear juice. When the small cider made with hot water was similarly heated, very little precipitate was formed. Tannic acid also appeared to cause a precipitate in the cold-made juice which it does not produce in the juice extracted by hot water. Owing to the higher temperature of the latter, fermentation starts readily and proceeds rapidly; but very little clarification takes place in keeving. Here, however, it may be stated that fermentation never commences so rapidly in the cold-made "small" juice as in the ordinary apple-juice, and it is therefore well to pump such small juice into keeves containing the lees of some whole juice which has just been keeved.

The juice obtained with cold water is very thick, and as fermentation proceeds in the keeve a similar result is produced to that in a test-tube on heating. An abundant head rises, sometimes even 6 inches thick, and a voluminous deposit forms in the keeve. In removing this head and when racking from the deposit there is, of course, much loss of juice. But if these operations are carried out with care, the resulting juice ferments more slowly, and can be subsequently treated with even greater ease than the hot-made juice.

I am inclined to think that the temperature at which the experiments were made was too high, and we must wait for further experiments to determine the relative merits of extracting with cold or warm water.

Such is the system of making small cider. Judging from the results of the experiments, it produces a good article at little expense and trouble. When the liquid has been keeved and becomes partly clarified it is racked into barrels. It will have been noticed that this small cider is deficient in both sugar and tannin. To remedy the former defect is easy, and in our experiments about 5 per cent. of pure cane sugar* is now added to the juice. Experiments have also been made to ascertain the effect of adding different quantities of tannin. Speaking generally, there is no question that the addition of tannic acid (British Pharmacopœia) has proved beneficial. So far as can be judged at the time of writing this Report, $\frac{1}{2}$ lb. of tannin to 1,000 lbs. of juice (about 2 hogsheads) has given the best result.

In connection with the use of tannin, it is again necessary to refer to the hot and cold systems of making small cider. The addition of tannin to the cold-made small cider causes it to clear;

* Not sugar-candy, which is largely used by cider-makers, but is more expensive, and, so far as I know, possesses no advantage over the best cane sugar.

in other words, the tannin acts as a precipitating agent, and would not remain in the juice; but when added to the hot-made small cider, it does not cause any precipitation, but remains in solution in the juice. Therefore the quantity of tannin employed must depend mainly on the way in which the small cider is made. Hence it becomes a question whether it would be profitable to employ sufficient tannin to clear the cold-made juice, and yet to leave enough in solution to give the desired astringency. There was no opportunity of clearing up this point.

EXPERIMENTS WITH PURE YEASTS.

It has frequently been stated that the fermentation which takes place in apple-juice, and converts it into cider, is brought about by minute vegetable cells termed yeast. These cells grow on the outside of fruit and are not confined to apples, being found on grapes, &c. There are many varieties of yeast; and each yeast, in addition to producing alcohol, appears to have the power of affecting materially both the flavour and aroma of the liquid in which it grows. Hence, it became desirable to try the effect of various yeasts. This was no easy task. It was necessary to take a substance which was likely to have yeast growing on it, and, by means of Koch's gelatine method, applied to apple-juice, to obtain this yeast perfectly pure. In this way, a start was made with a single yeast cell, which was gradually cultivated in proper nutriment until there was a sufficient quantity to ferment a hogshead or two of apple-juice. The great difficulty was to keep pure every solution in which the yeast was cultivated. From the first culture a minute portion of the pure yeast was transferred to a test-tube containing sterile apple-juice gelatine. This growth, if upon examination it is found to be free from any contamination, is called a "pure culture."

In this way pure cultures of six yeasts were obtained, the original sources being as under:—

- No. 1, from black grapes (hothouse).
- No. 2, from white grapes (hothouse).
- No. 3, from pure cider yeast culture (foreign).
- No. 4, from Kingston-Black apples.
- No. 5, from Gin apples.
- No. 6, from pure cider yeast culture (foreign).

Having obtained these pure cultures, it was next necessary to cultivate them in bulk. They were first grown in 10 cubic centimeters of cider, and here it may be stated that all the solutions and all the vessels employed were sterilised and

ugged with cotton wool, so as to prevent subsequent contamination. From the 10 cubic centimeters of cider they were transferred to 100 cubic centimeters in a Pasteur's flask. After all growth had taken place, they were each transferred into one-shaped, flat-bottomed glass flasks, each containing 300 cubic centimeters of Pasteur solution. This solution contains cane sugar and all the mineral and other constituents necessary to the growth of yeast. It had to be employed as this work was proceeding during the summer when apple-juice could not be easily obtained in sufficient quantity. However, the Pasteur solution answered the purpose, though I think it will be desirable in future to slightly modify it, in order to obtain the best results with cider yeasts. The yeast was now growing vigorously and increasing materially in bulk. So soon as fermentation stopped, it was transferred to a large flask containing 1,500 cubic centimeters of Pasteur solution, and subsequently to metal vessels containing 3,000 cubic centimeters of solution. This was done in my laboratory in London, prior to the commencement of cider-making. At Butleigh the yeasts were transferred to six small barrels, each containing eight gallons of sterile apple-juice. The apple-juice was first sterilised by passing super-heated steam into it for twenty minutes. Finally, the yeast was placed in large barrels, which were filled with apple-juice. Thus experiments are being made on a larger scale than has ever been possible before, and with six varieties of yeast. It is not possible to report upon the results until fermentation has proceeded further; but this much may be said, that the cider so far obtained is not so markedly superior as it has been in former years to that produced without the pure cultures. Mr. Neville Grenville suggests as reasons for this that the season was one eminently conducive to the production of clean fruit; that more than ordinary care was taken with the fruit, owing partly to there being less to attend to, and partly to these experiments having taught every one connected with the cider-making at Butleigh the importance of cleanliness. Moreover, just as in some years better wine is produced than in others, so there may be some seasons specially favourable to the production of excellent cider. 1896 may have been such a season. The reasons suggested sufficiently account for the fact that the pure yeasts obtained artificially have not produced cider strikingly different to that resulting from pure yeast obtained naturally.

APPENDIX.
COMPOSITION OF THE JUICE OF VARIOUS APPLES.

Name and Average Weight of Apple.	No.	Specific Gravity.	Solids.	Acid.	Sugar.	Tannin.	Grower.	District.
			per cent.	per cent.	per cent.	per cent.		
Unknown 4.00	81	1.0649	16.34	.25	13.59	.16	H. J. W. Coulson—"A"	Tiverton
Unknown 5.00	82	1.0684	17.52	.33	15.26	.36	Do. "B"	Do.
Unknown 2.64	83	1.0594	15.31	.20	12.98	.23	Do. "C"	Do.
Sweet Slack-my-Girdle .. 5.33	84	1.0569	14.42	.24	12.43	.07	Do. "	Do.
Strawberry Norman 1.75	85	1.0677	17.42	.33	14.50	.51	Rev. Geo. Herbert ..	Ross
Kingsdon Black 2.33	86	1.0612	15.32	.55	13.18	.10	Do. "	Do.
Sour Hereford 2.75	87	1.0657	16.00	.80	13.38	.07	R. F. Rendell ..	Staverton
Natural Pocket Apple 2.00	88	1.0712	18.10	.35	15.53	.26	Do. "	Do.
Pocket Apple 2.26	89	1.0632	15.78	.28	14.03	.24	Do. "	Do.
New Foxwhelp 2.43	90	1.0642	15.40	1.12	13.59	.22	John Watkins ..	Hereford
Black Foxwhelp 2.66	91	1.0632	15.30	.80	14.26	.24	Do. "	Do.
Old Foxwhelp 1.90	92	1.0446	11.02	.66	9.01	.11	Do. "	Do.
Red Cluster 2.00	93	1.0616	15.86	.24	14.28	.11	H. J. W. Coulson ..	Tiverton
Green Ridgway 3.40	94	1.0621	15.78	.90	13.58	.09	Do. "	Do.
Ware Apple 1.47	95	1.0546	14.02	.25	12.36	.13	Do. "	Do.
Kingsdon Natural 3.00	96	1.0646	16.42	.32	14.66	.31	R. F. Rendell ..	Staverton
Kingsdon Bearer 2.41	97	1.0666	17.08	.28	15.27	.29	Do. "	Do.

105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126
2.00	2.54	..	2.90	4.30	2.70	1.70	3.10	5.68	2.87	2.00	2.00	3.68	2.00	4.00	5.00	2.50	1.61	1.83	2.50	1.87	2.10
105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126
1.0613	1.0583	1.0608	1.0645	1.0545	1.0675	1.0691	1.0616	1.0646	1.0581	1.0686	1.0611	1.0601	1.0646	1.0578	1.0578	1.0608	1.0703	1.0549	1.0740	1.0655	1.0715
14.72	14.10	15.48	14.98	12.82	16.58	17.30	15.64	16.42	14.68	17.36	15.52	15.04	16.26	14.22	14.28	15.06	17.68	13.46	18.60	16.18	17.84
13.41	12.50	13.41	13.41	11.70	15.27	15.06	14.10	14.10	13.25	15.06	13.58	13.25	14.10	12.50	12.98	13.51	15.62	11.90	16.66	14.70	16.12
..
Do.	Do.	R. Neville Grenville	J. H. Hill	Do.	Do.	J. C. Waterman	Do.	Do.	Do.	Do.	J. H. Symes	Do.	Do.	Do.	Do.	Do.	Do.	J. C. Waterman	Do.	Do.	Do.
Do.	Do.	Bulleigh	Totnes	Do.	Do.	Batonsboro'	Do.	Do.	Do.	Do.	Marlock	Do.	Do.	Do.	Do.	Do.	Do.	Batonsboro'	Do.	Do.	Do.
H.	H.	S.	D.	D.	D.	S.	S.	S.	S.	S.	S.	S.	S.	S.	S.	S.	S.	S.	S.	S.	S.
Cowarne Red	Cherry Pearmain	Colbrook	Pocket Apple	Butter Box	Kingston Bitter	Kingston Black	Red Jersey	Bitter Scale	White Jersey	King of Jerseys	Royal Jersey	Male's Perfection	Lemons	Broad Leaf	Nortons	Spotted Jersey	Soldiers	Improved Kingston Black	Norton's Bitter	Norman Red Streak	Royal Jersey

XI.—*The Society's 1896 Exhibition of Cider.*

By F. G. FARWELL, Steward.

THE representatives appointed by the Society to visit the Pomological Exhibition at St. Brieuc, in Brittany, during October, 1895, embodied in their Report to the Society's Council certain recommendations based upon information resulting from their inquiries. These recommendations, which were adopted by the Council, were as follows:—

1. *That, instead of money, a silver medal and a certificate of merit be given as a first prize, and a bronze medal and a certificate of merit as a second prize, in each Class.*

2. *That the exhibits be divided into the four following sections, viz.:—Cider made (a) in Devon; (b) in Herefordshire; (c) in Somerset; (d) in other counties.*

3. *That each section be divided into three sub-sections for cider made by (a) Landowners, who own and occupy not less than 50 acres of land, of which 5, at least, are orchard; (b) Tenant Farmers, who occupy not less than 30 acres of land, of which 3, at least, are orchard; (c) Cider Merchants, whose business is to manufacture and to deal in cider.*

4. *That each sub-section be divided into two Classes for (a) Cider in cask; (b) Cider in bottles.*

5. *That no cider be considered genuine which does not contain at least 4 per cent. of alcohol.*

6. *That all Exhibitors sign a declaration that the cider is made solely from apple-juice and contains no preservative.*

7. *That all exhibits be delivered in the Show-yard at least ten days before the opening of the Show, so as to allow of analysis.*

8. *That all exhibits be considered the property of the Society, so that facilities may be given for public tasting.*

9. *That the Society provide cards to be filled up by each Exhibitor, giving particulars concerning the fruit from which the cider is made, and other information.*

10. *That the Judges be instructed in making their awards to consider: (1) Flavour; (2) Aroma; (3) Clearness; (4) Alcoholic strength.*

These recommendations were embodied in the conditions under which cider was shown for competition at the Society's 1896 Exhibition at St. Albans.

Other conditions were as follows:—

- (1) *The Exhibitor must certify:—That the cider is his own property; was made by himself or his servants, and (if entered in a Landowner's or Tenant Farmer's Class) from apples grown by himself, and was made solely from apple-juice.*

- (2) *All cider exhibited must have been made in 1895.*
(3) *Each exhibit in cask must consist of not less than eighteen gallons.*
(4) *No Exhibitor can enter more than one exhibit of the same brand or make in any Class.*
(5) *No trade mark or trade label will be permitted on either casks or bottles, and the corks must not bear the maker's brand.*
(6) *Exhibits shown in casks previously used for wine or spirits may, if the flavour of the cider is affected thereby, be disqualified.*
(7) *A cork must be placed by the Exhibitor in the head of each cask, so as to admit of an ordinary sized tap being inserted in the cask.*
(8) *The casks will be returned to the Exhibitors after the close of the Exhibition.*
(9) *The decision of the Stewards in any case of disqualification must be regarded as final.*

The total number of entries (classified as follows), was 51, as against 39 at Taunton in 1895.

CLASSES.	CIDER MADE IN DEVON.		ENTRIES.
135.—Cask of Cider (open to Landowners only)	2
136.—12 Bottles of Cider (open to Landowners only)	2
137.—Cask of Cider (open to Tenant Farmers only)	1
138.—12 Bottles of Cider (open to Tenant Farmers only)	1
139.—Cask of Cider (open to Cider Merchants only)	—
140.—12 Bottles of Cider (open to Cider Merchants only)	—
CIDER MADE IN HEREFORDSHIRE.			
141.—Cask of Cider (open to Landowners only)	—
142.—12 Bottles of Cider (open to Landowners only)	—
143.—Cask of Cider (open to Tenant Farmers only)	1
144.—12 Bottles of Cider (open to Tenant Farmers only)	4
145.—Cask of Cider (open to Cider Merchants only)	2
146.—12 Bottles of Cider (open to Cider Merchants only)	2
CIDER MADE IN SOMERSET.			
147.—Cask of Cider (open to Landowners only)	1
148.—12 Bottles of Cider (open to Landowners only)	1
149.—Cask of Cider (open to Tenant Farmers only)	10
150.—12 Bottles of Cider (open to Tenant Farmers only)	10
151.—Cask of Cider (open to Cider Merchants only)	1
152.—12 Bottles of Cider (open to Cider Merchants only)	1
CIDER MADE IN COUNTIES OTHER THAN DEVON, HEREFORDSHIRE, OR SOMERSET.			
153.—Cask of Cider (open to Landowners only)	1
154.—12 Bottles of Cider (open to Landowners only)	1
155.—Cask of Cider (open to Tenant Farmers only)	2
156.—12 Bottles of Cider (open to Tenant Farmers only)	3
157.—Cask of Cider (open to Cider Merchants only)	2
158.—12 Bottles of Cider (open to Cider Merchants only)	3
			—
			51

All the cider was delivered into the Show-yard on Saturday, May 16th, and was at once unpacked, and bottles and casks were set up in position in the cider tent.

On Monday the 18th, Mr. F. J. Lloyd, F.C.S., who conducts the Society's experimental work in connection with cider-making, sent down his assistant, Mr. W. D. McCreath, and he, in the presence of the Steward, took samples from each entry for the purpose of analysis, each sample being numbered to correspond with the entry. On taking these samples, it was found that much of the cider in casks was in a high state of fermentation. This was very possibly caused by the use of casks not properly cleansed, which had previously contained either wine or spirits. I am afraid that it is a very general custom among cider makers to put cider in fresh emptied spirit casks in order to obtain a twang of the spirit, but it is a custom which cannot be too much deprecated. It is a well-known fact that fungi will grow in the wood of an empty wine or spirit cask, and if once there will rapidly set up a fresh fermentation of the worst possible character in the cider contained in the cask. Good cider should have a bouquet of its own, and not a borrowed one. Like good wine, it "needs no bush."

The analyses of the entries of cider were received from Mr. Lloyd on Tuesday, May 26th, were at once entered upon cards, previously prepared by the Secretary, and attached to each exhibit for the information of the public. Other particulars supplied by the exhibitors with respect to name of fruit, soil, aspect, manure used in the orchards, &c., were also given on the same cards. This information is tabulated, for easier reference, in the annexed Appendices A and B.

Mr. W. Wise, of Midsomer Norton, was the Judge appointed by the Society, and he commenced his duties on the morning of Wednesday, May 27th, being the first day of the Show. It was then found that 31 out of the 51 exhibits did not comply with the condition of entry, which made 4 per cent. of alcohol a *sine qua non*. Many of the other exhibits were of very poor quality, some being little better than vinegar. In the Devonshire classes, all the exhibits except one failed to reach the requisite alcoholic standard, and the only one that did was not considered of sufficient merit to deserve mention. All in the Herefordshire and nine in the Somerset classes were similarly deficient in alcohol. In fact, the only classes in which there was any real competition were the two open to Somerset tenant farmers for cider in cask and bottle. In the cask classes, the Judge had no difficulty in awarding the first prize to Mr. W. T. S. Tilley, but declined to give any second prize or commenda-

ion; while in the bottle class he again gave Mr. W. T. S. Willey first prize, and the second prize to Mr. H. J. Davis—none of the others being noticed. Eight of the exhibits from other counties were alcoholically deficient, and no prizes were awarded to any of the remainder. Under these circumstances, the gold medal offered by the Society was not awarded.

The general result was certainly somewhat startling, but tended to show that the Society is on the right track in insisting on all exhibits being analysed. I believe that many of the exhibitors had not the least idea what percentage of alcohol their cider contained. In many cases it was below the standard, but then the maker may say, the amount of sugar in the solids is so large that the cider will increase in alcoholic strength. It may do so; but the British public want an article fit for immediate consumption, and cider, when sent to the Show-yard, should be in such condition, whereas the cider shown was, in the majority of cases, either through the use of unclean casks, or for lack of alcoholic strength, or for want of clearness, not in a fit state to be put on the market. Cider with such a small percentage of alcohol and so much sugar should be kept in cask for another year, and should not be exhibited at a Show held at a time of the year when, as the hot weather is just commencing, it is most in demand.

Considerable difference of opinion has been expressed as to the wisdom of insisting upon the standard of 4 per cent. of alcohol. It has been stated that, although this alcoholic standard may be all very well in foreign countries, where 18 to 20 per cent. of solids and 16 to 18 per cent. of sugar are found in the juice, it is utterly unsuited to England, where solids rarely touch 12 to 13 per cent. Now, if reference be made to the tables (published in the Society's 'Journal' of last year, page 161), showing the composition of the juice of various apples, it will be seen that 12 or 13 per cent. is very low; but even taking 12 per cent. of solids as an example, any maker who understands his business can produce with this proportion of solids a cider containing 4 per cent. of alcohol, and still leave 4 per cent. of other solids in it. It is, therefore, quite possible to make a sweet cider containing 4 per cent. of alcohol. If, as contended, 12 per cent. is the average (and I should be sorry to think it is so), it only demonstrates the importance of going to the root of the evil and improving the orchards by growing a better class of apples, and not such as are of an inferior quality. Again, if the standard were lowered to 2 or 3 per cent. of alcohol, what would be the result? Cider merchants could buy dry cider, containing from 5 to 6 per cent. of alcohol, and, by mixing this with twice its own volume of syrup, or of water containing sugar, they would be

able by such means to supply more than twice as much cider as is made in the whole of England. Consequently, any increased consumption of cider by the British public would be of no value to farmers, but would merely put money in the pockets of these cider merchants, or perhaps I had better call them cider "blenders."

The advantage of having samples analysed before judging was also curiously demonstrated by the fact that one or two exhibits were disqualified, on the ground that they were outside the limits of the composition of the juice of any English apple. Such a result can be readily arrived at by doubling the percentage of alcohol and adding the solids. In these cases it was therefore evident that something other than the pure juice of the apple had been introduced.

On a comparison of the tables in the Appendix, it will be found that the amount of acidity in the exhibits varied enormously—from .35 to .96 per cent. No good cider should really have more than .50 per cent. of acidity. It will likewise be seen that the cider containing most sugar, as a rule, also contained most acid. Take, for example, two of the exhibits: one in bottles contained 1.45 of alcohol, .92 of acidity, and 8.84 of solids; the other in cask contained 1.70 of alcohol, .90 of acidity, and 8.53 of solids—little more than sugar and water, and enough acidity to give anyone a stomach-ache into the bargain! It is an interesting question how far it is necessary for the manufacturers of sweet cider to cover the natural acidity of their apples. The practical conclusion is that, in mixing the sorts, care should be taken when one apple is known to be of high acidity to add another of a low acidity to counterbalance it.

In order to demonstrate this further, it will be seen that the only two first prizes given were for a judicious blending of Pip Jersey, Kingston Blacks, Horner, and Cadbury, and a reference to the tables (published in the Society's 'Journal' of last year) giving the composition of apple-juice will show that the juice of these apples analysed as follows:—

Name of Apple.	Sp. Gr.	Solids.	Acid.	Sugar.	Tannin.
Pip Jersey	1.0558	13.28	.67	12.65	.96
Kingston Black	1.0672	16.60	.64	14.08	.11
Horner	1.0554	13.58	.31	12.19	.19
Cadbury	1.0535	12.54	.18	11.76	.21

The second prize was awarded to a cider comprising a blend of Red Jersey, Chisel Jersey, Cadbury, Cap of Liberty, and Horner, of which the analyses are as under:—

Name of Apple.	Sp. Gr.	Solids.	Acid.	Sugar.	Tannin.
Red Jersey	1·0660	16·14	·16	14·92	·24
Chisel Jersey	1·0620	15·14	·20	14·49	·35
Cadbury	1·0535	12·54	·18	11·76	·21
Cap of Liberty	1·0492	11·70	·80	10·63	·26
Horner	1·0554	13·58	·31	12·19	·19

I regretted to find that many of the exhibitors were unable to answer the questions asked on the cards as to the weight of apple, the specific gravity of the juice, and the general characteristics of the trees, which shows that sufficient care is not taken in keeping a record of these facts, and I cannot but impress upon the exhibitors the importance of such records.

After the judging was completed and the public had been admitted, there was, as might be expected, considerable dissatisfaction among many of the exhibitors at the result of the awards, and an arrangement was made for an informal meeting in the cider pavilion of all persons interested in the cider trade on the following day. Mr. Lloyd was present at this meeting, and, after explaining the reason of the awards and stating his views upon the several causes of disqualifications, was able to demonstrate the result practically by submitting the various exhibits to the public taste. Most of the exhibits were then sampled by the company present, and it was gratifying to find that the general consensus of opinion, after tasting, was that the Judge was quite right in his decisions. During the whole time of the Show, opportunities were given to any persons interested in the cider trade to taste the various exhibits, and the results were, I believe, not only satisfactory to the public, but to a good number of the exhibitors. It should also be mentioned, that great interest was taken in the cards affixed to each exhibit, and many persons were observed at various times taking notes of the same.

Mention must also be made of a fresh departure, consisting of the exhibition of a number of drawings of apples suitable for cider-making, the fruit so depicted having been collected from various growers in the several counties of Somerset, Devon, and Hereford. The thanks of the Society are due to the gentlemen who, in response to the appeal addressed to them, kindly took the trouble to collect and send the fruit to the Society, as well as to name and give the general characteristics of the several sorts of apples best suited for cider-making in their immediate districts. The majority of the apples thus sent were also analysed by Mr. Lloyd, and the result of these analyses will be found on page 161 of last year's volume of the Society's

'Journal.' Drawings in water-colour of all these apples were made by Miss Hunter, a student in the Science and Art Department of South Kensington, who was recommended by Mr. Cundall, the Society's Steward of Arts, and great credit is due to her for the manner in which the work has been executed. Much interest was taken in these drawings by many visitors, who readily recognised the apples as sorts grown in their various districts, though not always by the same names, while the analysis of each variety added considerably to the value of the collection.

I think it would be very desirable, whenever the Society's Show is held in an orchard district, that prizes should be given for the best cultivated orchard in that district. That orchards are deteriorating is, I fear, an undeniable fact, and close attention to them for many years will be required. A century of neglect, the ravages of insects, the violence of storms, and the effect of age, have caused the loss of many of the best varieties of apple. Let it be remembered, that when once planted, the best fruit-trees do not require more care or expense than the worthless ones, and a glance at the analyses in the Society's 'Journal' previously referred to will show what are the best sorts for selection.

In conclusion, I must thank the Steward of Works for the great improvement there was in the construction of the Cider Pavilion in the Show-yard at St. Albans. The adoption of a thatched roof in place of a canvas one kept the building cool, and at an even temperature throughout during the whole time of the Exhibition.

APPENDIX A.—ANALYSES.

No.	Name of Exhibitor.	Specific Gravity at 60° F.	Alcohol by Volume.	Acidity.	Solids per cent.	
1	{ Sir John Heathcote Amory, Bart. }	1·0138	5·20	·41	4·83	
2	R. F. Rendell	1·0328	2·30	·70	8·47	
3	Sir J. H. Amory, Bart.	1·0208	3·85	·41	6·43	
4	R. F. Rendell	1·0308	2·40	·78	7·89	
5	H. Haydon	1·0268	3·30	·50	7·45	
6	H. Haydon	1·0273	3·60	·55	7·58	
..	No entry.	..	..	..	..
7	H. Weston	1·0327	3·75	·60	9·12	
8	E. F. Bosley	1·0287	2·90	·57	7·63	
9	H. Weston	1·0332	2·80	·65	8·80	
10	H. Weston	1·0317	3·00	·71	8·34	
11	J. H. Wootton	1·0372	1·70	·54	9·47	
12	Bosley and Company	1·0262	2·40	·53	6·91	
13	J. Watkins	1·0347	2·00	·62	9·08	
14	Bosley and Company	1·0412	1·65	·96	10·47	
15	J. Watkins	1·0297	3·15	·56	7·59	
16	E. M. Whitting	1·0150	5·40	·47	5·52	
17	J. Kidner	1·0427	1·70	·72	11·11	
18	W. and M. Chapman	1·0397	1·65	·60	10·35	
19	H. Clark	1·0087	4·90	·55	3·40	
20	H. J. Davis	1·0243	4·65	·60	7·04	
21	J. T. Dibsall	1·0068	6·00	·56	3·14	
22	J. A. Gill * .. ..	..	..	..	..
23	E. Kidner	1·0278	3·95	·48	8·15	
24	R. W. Scott	1·0201	4·90	·37	6·39	
25	J. H. Symes	1·0126	5·80	·40	4·80	
26	W. T. S. Tilley	1·0038	6·60	·54	2·80	
27	W. T. S. Tilley	1·0224	5·25	·52	6·87	1st Prize.
28	W. and M. Chapman	1·0409	1·55	·62	10·49	
29	H. Clark	1·0096	4·85	·36	3·65	
30	H. J. Davis	1·0229	4·45	·51	6·93	2nd Prize.
31	J. T. Dibsall	1·0029	6·80	·52	2·63	
32	H. Farthing	1·0339	3·15	·49	9·27	
33	J. Fifett	1·0196	5·40	·40	6·53	
34	J. A. Gill * .. ..	..	..	..	..
35	E. Kidner	1·0299	2·50	·54	8·26	
36	W. T. S. Tilley	1·0084	6·00	·54	3·77	
37	W. T. S. Tilley	1·0139	5·30	·41	4·93	1st Prize.
38	James Watts	1·0289	2·90	·80	7·77	
39	James Watts	1·0299	3·30	·84	8·08	
40	H. Thomson	1·0406	2·00	·53	10·64	
41	H. Thomson	1·0451	2·15	·81	11·88	
42	D. Langlands	1·0339	1·70	·90	8·53	
43	J. Wherrett	1·0336	1·75	·39	8·71	
44	D. Langlands	1·0359	1·45	·92	8·84	
45	D. Phelps	1·0276	4·90	·61	8·23	
46	J. Wherrett	1·0346	1·55	·35	9·06	
47	R. Rout and Son	1·0171	5·70	·52	5·83	
48	Swanley Cider Co. ..	1·0270	3·00	·55	7·06	
49	R. Rout and Son	1·0176	5·80	·67	6·91	
50	R. Rout and Son	1·0256	5·25	·71	7·79	
51	Swanley Cider Co. ..	1·0340	2·05	·56	8·59	

* Cider not sent in time for analysis.

APPENDIX B.

Class.	No.	Name of Fruit.	Information relative to Fruit.	Soil of Orchard.	Aspect of Orchard.	General Information.
Cider made in Devon. 135. <i>Landowners. Casks.</i>	1	Mixed	Ripens in October. Sp. gr. of juice, 1·057.	Loam, alluvial.	Level in the Exe Valley, north and south.	Orchard thoroughly pruned in 1894.
	2	Equal parts of Kingston Bearer, Pocket Apple, Butter Box, and Sour Hereford.	All hardy trees and good bearers; the first two sorts blossom in May, the others a fortnight later in same month. Fruit ripens in November. Sp. gr. of Butter Box and Sour Hereford, 1·0557.	Loam, sub-soil, clay.	Valley open to north and east.	Orchards manured with road scrapings and cleaning-up of rick-yards. During lambing season swedes given in them to ewes.
136. <i>Landowners. Bottles.</i>	3	Mixed	Ripens in September. Sp. gr. of juice, 1·059.	Loam, on red sandstone.	South-west.	Orchards thoroughly pruned in 1893; dressed with caustic soda and potash for lichen (successful), and with Scott's "Killiwright."
	4	Equal quantities of Kingston Bearer, Pocket Apple, Butter Box and Sour Hereford.	All hardy trees and good bearers; the first two sorts blossom in May, the others a fortnight later in same month. Fruit ripens in November. Sp. gr. of Butter Box and Sour Hereford, 1·0557.	Loam, sub-soil clay.	Valley open to north and east.	Road-scrapings and cleaning-up of rick-yards. During lambing season swedes given in them to ewes.
137. <i>Tenant Farmers. Casks.</i>	5	Mixed varieties, correct names uncertain; sweet and bitter sweet, excluded in 2 sour harsh sorts.	Trees blossom in May and fruit ripens in October and November. Sp. gr. of juice about 1·060.	Heavy loam.	South-east.	None.

133. Tenant Farmers. <i>Bottle.</i>	6	Same as No. 5	Same as No. 5	Heavy loam.	South-east.	None.
139. 140. 141. 142.	} No Entry.					
Cider made in Hereford- shire. 143. Tenant Farmers. <i>Cask.</i>	7	Royal Wilding, one-third, Yellow Styre, two-thirds.	Trees fairly hardy but shy- bearers; blossom in May, and fruit ripens end of October. Sp. gr. of juice, 1·070.	Clay.	South-east.	Orchards grazed with stock with a liberal allowance of cake and corn; and with an occasional dressing of road-compost.
144. Tenant Farmers. <i>Bottle.</i>	8	Strawberry Norman, Red- streak, and Yellow Nor- man, one-third of each.	Trees hardy and good bearers; blossom in May, and fruit ripens in September and October; depends on season.	Clay.	South-east.	All orchards nearly being grass, little manuring is done; no doubt would prove of great benefit, as in young orchards that have been hop land and done well, the fruit is much larger. Orchards are grazed with stock with a liberal allow- ance of cake and corn; and with an occasional dress- ing of lime and road- scrappings.
	9	Foxwhelp and Ansell, about equal parts.	Trees hardy, but rather shy bearers; blossom in May, and fruit ripens in October and November. Sp. gr. of juice, 1·072.	Clay.	South-east.	

APPENDIX B.—continued.

Class.	No.	Name of Fruit.	Information relative to Fruit.	Soil of Orchard.	Aspect of Orchard.	General Information.
Cider made in Herefordshire. 144.	10	Tanner's Red and Yellow Styre, about equal parts.	Trees hardy, but rather shy bearers; blossom in May, and fruit ripens about end of October. Sp. gr. of juice, 1·068.	Clay.	South-east.	Same as No. 9.
Tenant Farmers. Bottles—continued.	11	Kingston Black, three-fourths, and Foxwhelp, one-fourth.	Trees hardy and good bearers; Foxwhelp good if well manured. Blossom in May. Fruit ripens in November. Weight of apple, 3 oz. Sp. gr. of juice, 1·069, 1·053.	Sandstone, loams.	South.	Dressing of farmyard manure every second or third year.
145. Cider Merchants. Casks.	12	Strawberry Norman	Trees hardy and good bearers; blossom end of April and May. Ripens in October.	Clay.	South-west.	None.
	13	Cummy Hereford	Trees hardy and good bearers; fruit ripens late; apple small. Sp. gr. of juice, 1·033.	Stiff loam, clay subsoil.	West.	Grass orchards, manured by sheep having corn.
146. Cider Merchants. Bottles.	14	Old Foxwhelp and Yellow Norman, half of each sort.	Yellow Norman, a hardy tree, but not Old Foxwhelp; good bearers. Fruit ripens in October.	..	South-west.	None.
	15	Cherry Hereford	Trees hardy and good bearers; blossom in May, and fruit ripens late. Apple small.	Stiff loam, clay subsoil.	West.	Grass orchards, manured by sheep having corn.

147.	Landowners. Casks.	17	Vinning's Pippins	Trees sometimes good bearers; apple small.	Clay.	Level.	Have only had one year's experience of the orchard.
148.	Bottles.	18	Kingston-Blacks	Trees not very good bearers, but hardy; apple small, juice very rich. Trees blossom in May, and fruit ripens end of September.	Clay.	No particular aspect.	I think pigs kept in the orchard is the best manur- ing.
149.	Tenant Farmers. Casks.	19	Hangdowns, Cadburys, Green Rollers, Dorset- shire.	Trees hardy and average bearers; blossom in May, fruit ripens in October. Weight of apple, 100 lbs. to bushel.	Stiff clay.	South-east.	Pig or other farmyard manure.
		20	Red Jersey, Chisel Jersey, Cadburys, Horners, Cap of Liberty.	None	Sandy loam, subsoil clay.	Sheltered from north and east.	None.
		21	Tom Puds, Dorsets, Bitter Sweets, and Hangdowns, about equal quantities.	Hardy trees and good bearers; blossom in May, and fruit ripens in October and November.	..	Exposed on the flat.	Have manured from cess- pools with liquid manure.
		22					
		23	Kingston Blacks, Pound Apples, Black Herefords, and many other sorts too numerous to mention.	Trees of a moderate hardy nature and good bearers; blossom in May, and fruit ripens in October and November.	Sandy.	South-east.	Kept well stocked with pigs, except when the fruit is worth saving.

APPENDIX B.—continued.

Class.	No.	Name of Fruit.	Information relative to Fruit.	Soil of Orchard.	Aspect of Orchard.	General Information.
Cider made in Somerset. 149. Tenant Farmers. Cider— continued.	24	Chisel Jersey, Kingston Black, and Horners, about the same of each.	Trees hardy. Chisels and Horners good bearers, but Kingston Black shy bearer. Trees blossom latter part of May, and fruit ripens in November.	Rich heavy soil.	Facing south.	Orchard kept stocked with pigs.
	25	Broadleaf one-half, remainder equal quantities of Kingston Black and Jerseys.	Trees hardy and very good bearers; blossom middle of May, fruit ripens October. Average weight of Broadleaf Apple, 8 oz., Kingston Black and Jersey, 4 oz. Sp. gr. 1.012.	Heavy clay.	Level land and open.	Wo use no manures, but winter cattle in orchards, fed on artificials.
	26	Blenheim Orange, Lord Salisbury, Kingston Black, Royal Jersey, in equal quantities.	All hardy and good bearers, except Blenheim Orange; Kingston Black ripens in October, all the others in September.	..	Facing due south.	Manure every other year, and use liquid manure often in stormy weather. Lime and prune or cut out trees properly annually. I believe in strongly manuring fruit trees with liquid, if available; in stormy weather liming the trees. 1st Prize.
	27	Pip Jersey, Kingston Black, Horner, and Cadbury, in equal quantities.	Trees good bearers and hardy; blossom in May, except Horners or Hangdowns, the last of all. Fruit ripens in September, except Kingston Black, the last of all.	Clay heavy.	Facing south.	

30	Red Jersey, Chisel Jersey, Cadbury, Cap of Liberty, and Horner.	100 lbs. to bushel. None	Sandy loam, subsoil clay.	Sheltered from north and east.	None. 2nd Prize.
31	Tom Puds, Dorseta, Bitter Sweets, and Hangdowns, about equal quantities.	Trees hardy and good bearers; blossom in May; fruit ripens in October and November.	Sandy loam, subsoil clay.	Exposed on the flat.	Have manured from cess-pools with liquid manure.
32	Two parts Black, two parts Hangdown, and one part Bitter Jersey apples.	Trees hardy and good bearers; blossom in May, and fruit ripens about 15th October. Weight of apple about 2 oz.; about 60 per cent. of sugar when made.	Stonerush (Query) brash.	South.	The orchards are folded with sheep and pigs. The cider now contains about 38 per cent. of sugar.
33	Red and White Jerseys, equal quantities.	Red Jersey very hardy, not so White; trees very good bearers when in prime; blossom late in May, and fruit ripens, White Jersey in October, and Red in November. Apple small.	Very deep loam.	South.	My orchards are never manured and never mown; generally fed with sheep.
34					
35	Kingston Blacks, Pound Apples, Black Herefords, and many other sorts too numerous to mention.	Trees of a moderate hardy nature; good bearers. Blossom in May; fruit ripens in October and November.	Sandy.	South-east.	Kept well stocked with pigs, except when fruit is worth saving.

APPENDIX B.—continued.

Class.	No.	Name of Fruit.	Information relative to Fruit.	Soil of Orchard.	Aspect of Orchard.	General Information.
Cider made in Somerset. 150. Tenant Farmers. <i>Bottles—continued.</i>	36	Blenheim Orange, Lord Salisbury, Kingston Black, Royal Jersey, in equal quantities.	All hardy and good bearers, except Blenheim Orange; Kingston Black ripens in October, all the others in September.	..	Facing due south.	Manure every other year, and use liquid manure often in stormy weather; lime and prune, or cut out trees properly annually.
	37	Pip Jersey, Kingston Black, Horner, and Cadbury, in equal quantities.	Trees good bearers and hardy; blossom in May, except Horners or Hangdowns, the last of all. Fruit ripens in September, except Kingston Black, the last of all.	Clay heavy.	South (facing).	I believe in thoroughly manuring fruit trees with liquid, if available; in stormy weather liming the trees. <i>1st Prize.</i>
151. Cider Merchants. <i>Casks.</i>	38	Mixed fruit; particular attention to condition and even maturity, but no name.	Trees being late, are hardy; blossom late; fruit ripens end of October. Sp. gr. of juice, 18½.	Good holding soil on clayey marl.	No special aspect.	No royal road. Careful attention to avoid <i>surrips</i> or <i>too ripe</i> fruit; the fruit being gathered dry and placed in loft and ground after it has shown itself fit by aroma, softness, and time.
152. Cider Merchants. <i>Bottles.</i>	39	Same as No. 38	Same as No. 38	Good holding soil on clayey marl.	No special aspect.	Same as No. 38.

153. Landowners. <i>Caska.</i>	41	No mention	.. ..	None	No mention.	No mention.	None.
154. Landowners. <i>Bottle.</i>	42	Margil	.. ..	Trees hardy, very heavy bearers; blossom late in May, and fruit ripens in October.	Loam on chalk.	Southern.	The orchard is old, on grass, and is pastured every year.
155. Tenant Farmers. <i>Caska.</i>	43	All White Styre	.. ..	Trees hardy, average bearers; blossom in May, and fruit ripens about October.	Very deep loam, with gravel sub-soil.	Level country.	A lot of pigs kept about the orchard. It is a cider that improves with age.
156. Tenant Farmers. <i>Bottle.</i>	44	Margil..	.. ..	Trees hardy, very heavy bearers; blossom late in May, and fruit ripens in October.	Loam on chalk.	Southern.	The orchard is old, on grass, and is pastured every year.
	45	Cowaruc Red, and other best mixed sorts of apples—Foxwhelp, Royal Wilding.	.. ..	Trees do not blossom very early.	Marly sub-soil.	Not mentioned.	None.
	46	All White Styre	.. ..	Trees hardy, average bearers; blossom in May, and fruit ripens about October.	Very deep loam, with gravel sub-soil.	Level country.	A lot of pigs kept about the orchard. It is a cider that improves with age.

APPENDIX B.—*continued.*

Class.	No.	Name of Fruit.	Information relative to Fruit.	Soil of Orchard.	Aspect of Orchard.	General Information.
Cider made in other Countries.	47	Mixed fruit—London Pippins, Russetts, and Ribston.	Trees hardly, fairly good bearers; blossom in May, and fruit ripens in October and November.	Clay.	Not stated.	Rearing and fattening poultry, &c.
157. Cider Merchants. <i>Casks—continued.</i>	48	Mixed fruit, not grown in the parish, therefore unable to supply the information with accuracy. Some Goffs from Maidstone, and some White Hereford, but not able to give proportions.	No information	Not stated.	Not stated.	No information.
158. Cider Merchants. <i>Bottles.</i>	49	Mixed fruit—Russett, Ribston, and King Pippin.	Trees hardly, fairly good bearers; blossom in May, and fruit ripens in October.	Clay.	Not stated.	In several of the smaller orchards, where rearing and fattening ducks, &c., this has proved very beneficial to the trees.
	50	Mixed fruit—Redstreak and Crow's Egg.	Trees not hardy, but very good bearers; blossom in May, and fruit ripens in October and November.	Clay.	Not stated.	Rearing and fattening poultry and ducks, &c., is an excellent thing for fruit trees.
	51	Mixed fruit, not grown in the parish, therefore unable to supply the information with accuracy. Some Goffs from Maidstone, and some White	No information	Not stated.	Not stated.	None.

XII.—*Reports upon the Society's Experiments for the Improvement of Permanent Pasture.*

INTRODUCTORY REPORT BY THE ACTING-CHAIRMAN OF THE
EXPERIMENTS COMMITTEE (MR. ACLAND).

As agriculturists, generally, will agree, the exceptionally severe drought of the summer of 1896 had, in almost every district, a disastrous effect upon the growth of grass. The Experiments Committee have special reason to regret this, inasmuch as the very character of the soils selected for experiment expressly because the attempt in each case to lay down permanent pasture had been, to some extent, unsuccessful, was such as to render them particularly liable to injury from an exceptionally hot and dry summer. Even under the most favourable conditions, it would have been extremely difficult, from one year's experience, to judge how far the deficiency of yield was due to the season, to the character of the soil, to unskilful cultivation, or to any other cause, but the drought rendered it impossible to arrive at any safe conclusion.

There are two elements in the experiments: one is the use of manures, and the other renovation by seed. In some cases the two are combined, in others they are separated. But, in the exceptionally dry condition of the soil, the operation of the manures would naturally be different from that which would have taken place in ordinary years; and the effect of the drought upon the germination of the various seeds used in renovation would equally baffle calculation. Some seeds might germinate, and others might entirely fail; or all the seeds recommended in any particular case might fail. It was practically impossible to tell how far this was so, or to what extent any such result might be due to exceptional drought or to the character of the soil. Further, the unusual dearth of food unquestionably led in some instances to much closer cropping of the herbage than would probably have been the case in an ordinary year—thus rendering any effect that might have been produced, either by manuring or by renovation, practically invisible. At the same time some experience has, nevertheless, been gained as to the effect of an abnormally dry season upon pasture, and upon manures, and seed used upon it.

In accordance with the scheme described in the Report published in the last issued volume of the Society's 'Journal,' the Botanical Visitor (Mr. Rowbotham) went the round of the sites in the month of June. It was intended that he should repeat his visits in the autumn, but on consideration of the peculiar condition of the pastures—due to the causes above

mentioned—it was not thought worth while to incur the expense. The Society's Consulting Botanist (Mr. Carruthers) also visited the sites, and his Report practically corroborates in all material respects the more detailed information furnished by Mr. Rowbotham. Particulars of these visits will be found in the following pages. A list (English and Latin) of the grasses, clovers, and weeds referred to in the following Reports will be found on pages 159, 160.

EXPERIMENTAL SITE NO. 1, AT TALATON, OTTERY ST. MARY,
DEVON.

Owned by Sir John Kennaway, Bart., and occupied by Mr. George Daw, of Larkbere Farm, Ottery St. Mary. An area of 5 acres has been treated thus :—

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5 Plots—1 acre each.

REPORT OF THE BOTANICAL VISITOR.

Date of visit, June 23rd, 1896.

While the Dung Plot seems to have made by far the greatest headway, the growth of weeds and grasses appears to have been equally encouraged. Especially have the coarser grasses been favoured. The Basic Slag Plot, on the other hand, exhibits a fair amount of growth, with a preponderance of clovers. On the Lime Plot the growth generally is very poor, the only grass which has apparently benefited being Sweet Vernal.

The demarcation between the Basic Slag Plot and the Lime Plot is very evident. The Lime Plot, in fact, exhibits no

material difference from the unmanured plot. The division of the Lime Plot from the Dissolved Bones Plot is also very sharply marked, and in the latter the bottom is much increased, with a fair development of Clover. Between the basic slag and the dissolved bones there is perhaps not much to choose, but of the two I have placed the dissolved bones first.

The absence of rain has rendered a proper estimate of the action of the lime impossible at the present time, as owing to the hardness of the ground the dressing has not gone into the soil, nor, for the same reason, have the plants been afforded a chance of drawing it down. The lime, in fact, has rather served to increase the dryness of the soil, and thus produced a mechanical condition prejudicial to growth. Dr. Voelcker, in his Report, stated that the application of lime and basic slag would determine in which form the deficiency of lime in the soil could best be supplied; but the existing conditions render such a comparison impossible at present.

Yorkshire Fog is one of the most abundant grasses in this field. From a careful inspection I am unable to perceive that the proportion of this worthless grass has been lessened by the manuring.

With regard to the Renovated Strip (crossing the ends of the plots) which was sown down with Foxtail, Cocksfoot, Timothy, and Yarrow, I find Cocksfoot to be fairly plentiful in places, with a few single plants of Timothy.

The order of results seems to be:—

1. Dung (Plot No. 1).
2. Dissolved bones (Plot No. 4).
3. Basic slag (Plot No. 2).
4. Lime (Plot No. 3).
5. Nothing.

REPORT OF THE CONSULTING BOTANIST.

Date of visit, October 20th, 1896.

There were a few indications of some seeds sown in the spring having germinated, single plants of Yarrow and Cocksfoot being observed in the plot; but the seeds have failed to make any real difference in the herbage.

The manures, however, considerably modified both the quantity and quality of the food. The thin soil of this field is exhausted and it needs kindly treatment.

The farmyard manure has given the best results: in June as well as in October this plot had a heavy crop of grass. This was to some extent due to the disinclination of the stock to graze the plot while there still remained on the surface some of the farmyard manure. It will supply a large amount of good

REPORT OF THE BOTANICAL VISITOR.

site of visit, June 22nd, 1896.

slight alteration (shown in the above diagram) was made regard to the plan of treatment of this site, as given in Society's 'Journal' (vol. vi. p. 185), the Dung Plot being instead of fifth in order, and the bone-meal being placed

The unmanured plot was dispensed with for want of space, the adjoining part of the field being taken as the base of comparison.

owing to the constant depasturage of this field, I find it impossible to distinguish the relative proportions of the species, and so cannot make comparisons between the various ones. The herbage, in fact, has been cropped so closely by stock that no satisfactory conclusion can be drawn.

The most that can be said at the present time is that the basic slag (Plot No. 2), and the basic slag with kainit (Plot No. 3)—but especially the former—seem to have promoted the growth of White Clover. Furthermore, the contrast between the Dung Plot and the other plots is here again very marked, and to some extent this may be due, as Mr. Stevens suggests, to the sourness of the herbage on the Dung Plot in comparison with the sweeter herbage of the other plots. Many of the grasses on this plot have been allowed to reach the flowering stage, and, generally, the herbage is coarse and clumpy compared with that on the Basic Slag and Lime Plots. The production of Dutch Clover may be said to have been favoured by the manures generally, as compared with the unmanured portion of the

With regard to the renovated strip, running across the ends of the five plots, I observed plenty of young Cocksfoot, and to appearance this seed has taken very well. I am unable to observe, however, a single plant of Timothy, and I do not think that the seeds of this grass can have germinated. But it should be noted that Cocksfoot is fairly plentiful also within the experimental area. It is, however, very easy to distinguish the older established plants from the young, tender growth which occurs so plentifully in the re-seeded strip. Timothy, on the other hand, does not occur anywhere in the field, to my knowledge, and circumstances have not been favourable to the germination of the seeds of this grass.

The grass within the hurdled space has become coarse and clumpy, and this affords an illustration of the coarse growth produced by protection from stock, as compared with the fineness of growth produced by constant depasturage.

REPORT OF THE CONSULTING BOTANIST.

Date of visit, October 21st, 1896.

The experimental field had been so thoroughly fed that the differences in the plots were not so apparent as in June when Mr. Rowbotham visited them. The improvement in the Farm-yard Manure Plot was then very marked, due, no doubt, to the presence of some of the dung on the surface, which made feeding there disagreeable to the stock. The young plants of Cocksfoot seen in June did not show themselves in the plots in October. They have, I fear, been destroyed by the summer's heat.

EXPERIMENTAL SITE NO. 3, AT WANSTROW, SOMERSET.

Owned by W. Hurle Clarke, Esq., and occupied by Mr. Richard H. Yeoman.

An area of 7 acres has been treated thus:—

3 1/2	1	Basic Slag. 8 cwt. per acre.	3 1/2	Mineral Superphosphate. 4 cwt. per acre.	3 1/2	Renovated by re-seeding.		3 1/2	1
						Dissolved Bones. 4 cwt. per acre.			
3 1/2	1		3 1/2		3 1/2	Dung. 12 loads per acre.	3 1/2	1	1
						Lime. 2 tons per acre.			
3 1/2	1		3 1/2		3 1/2	Salt. 5 cwt. per acre.	3 1/2	1	1
						Nothing.			

7 Plots—1 acre each.

REPORT OF THE BOTANICAL VISITOR.

Date of visit, June 24th, 1896.

Here six of the seven plots comprising the experimental area have been treated manurially. A deficiency of phosphoric acid in the soil led to three plots being treated for comparative results with superphosphate (Plot No. 2), basic slag (Plot No. 1), and dissolved bones (Plot No. 3). Two further plots were dressed with salt (Plot No. 6) and lime (Plot No. 5)

tively, with the view of checking the growth of coarse acid grasses; while to a sixth plot dung was applied at rate of 12 loads per acre, in order to supply the slight deficiency in nitrogen.

There can be no doubt as to the evidence afforded by the ; Plot. The growth of weeds as well as grasses is luxuriant, there is considerable depth of bottom. It should be observed, however, that the proportion of coarser grasses is at the same (as in the two previous experiments) rather increased.

The Basic Slag Plot shows an increase of Clover, and a very marked increase in the proportion of Yellow Oat-grass. This, in fact at the same time last year was not very plentiful, is now the most abundant grass of all, especially over the mowed plots.

The Lime Plot exhibits less luxuriance than either of the mowed plots, but a distinct encouragement of the *finer* grasses is observable, such as Hard Fescue. The proportion of weeds is diminished, and the plot generally is more grassy.

Notice here again, as at Ottery, that the apparent action of lime has been to harden the soil; and it is possible that the remarkable stimulation of Hard Fescue may be to some extent the consequence of this result.

Between the mineral superphosphate (Plot No. 2) and the mowed bones (Plot No. 3) there seems to be very little difference, while the salt (Plot No. 6) shows little or no improvement over the unmanured plot.

The order of results appears to be as follows:—

Dung (Plot No. 4). General luxuriance of herbage.

Basic slag (Plot No. 1). Promotion of clovers and Yellow Oat-grass.

Lime (Plot No. 5). Very grassy; smaller quantity of clover.

Dissolved bones (Plot No. 3). }
Superphosphate (Plot No. 2.) } About equal.

Salt (Plot No. 6). Very little better than Nothing Plot.

The want of rain is manifest here as elsewhere, although the fact of this field has a reputation for being generally damp. The effect of drought, however, on such soils is to render them hard, and therefore unsuited to the growth of the shallower rooting grasses. Moreover, and especially in the case of the lime, the crust has prevented the manures from entering the soil to any depth, and hence the deeper rooting grasses, such as Cocksfoot, have derived no advantage from its action.

Possibly no grass is more susceptible to varying conditions of moisture than Cocksfoot, other necessary conditions of growth being present. For some reason or another this grass does not

flourish in the open portions of this pasture, but it is to be found thickly occupying a large patch close to a tree on the Superphosphate Plot. It is essentially a shade-loving grass, and here, as in other pastures, it grows luxuriantly beneath the trees and at the borders of the field, associated with Smooth Meadow-grass. Again, in the small field adjoining, where the soil is much wetter, Cocksfoot is seen in abundance, growing to a height of over 3 feet.

The effects of the dry season are apparent in other ways. Thus, the Yellow-rattle, which was so abundant last year, is by no means so plentiful at the present time. Carnation-grass has likewise greatly diminished since last year. Hassock-grass, on the other hand, has noticeably increased, especially with the nitrogenous manures.

On the renovated strip running across the manured plots the seeds of Foxtail, Cocksfoot, Timothy, Dutch Clover, and Yarrow were sown early in the spring; but I am unable to perceive that any of the seeds have germinated.

The silage patch, to which I referred in my previous Report, forms, I think, an interesting experiment on a small scale. The centre of the patch, which marks the spot on which the silage rested, is occupied by a dense clump of grasses, comprising Cocksfoot, Tall Fescue, and Yorkshire Fog. Forming a compact ring enclosing this central clump is a mass of Ox-eye daisies, which have sprung from the deeply trodden ground where the cattle congregated round the heap. Timothy-grass, which was seen here last year, has apparently succumbed to competition; and to the same cause, perhaps, may be assigned the disappearance of Hassock-grass, which was last year among the first to obtain a footing on the almost bare patch of soil. Both Cocksfoot and Tall Fescue, it should be noted, are scarce in other parts of the field.

REPORT OF THE CONSULTING BOTANIST.

Date of visit, October 19th, 1896.

The stock had been on the field until some two or three days before my visit. They had regularly depastured the whole field, and during the three days the herbage had so uniformly recovered itself that no difference could be observed among the plots, or between the plots and the rest of the field. Unfortunately, Mr. Yeoman was absent at the time of my visit, and I was unable to ascertain the history of the plots since Mr. Rowbotham visited them. The seeds sown in the spring had failed to get possession of the soil.

REPORT OF THE STEWARD IN CHARGE (MR. C. R. KNOLLYS).

Date of visit, September 30th, 1896.

I found that all the plots had been closely grazed, and there was very little difference to be seen between them. The Dung Plot and the plot dressed with dissolved bones appeared to carry a thicker and kinder herbage than the others, and there seemed to be rather a better plant of clovers in these plots than in the others. I could not see any result from the re-seeding of the upper portion of the plots; there is little doubt that the season prevented germination.

EXPERIMENTAL SITE No. 4, AT SHERBORNE, DORSET.

Owned by J. K. D. Wingfield Digby, Esq., M.P., and occupied by Mr. T. H. Miller, Black Marsh Farm, Sherborne.

An area of 4 acres has been treated thus:—

<i>Road Scrapings.</i>	<i>Nothing.</i>	<i>Basic Slag. 8 cwt. per acre.</i>	<i>To be re-seeded in Spring, 1896.</i>
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4 Plots—1 acre each.

REPORT OF THE BOTANICAL VISITOR.

Date of visit, June 25th, 1896.

As might be expected with such a well-drained soil, the effects of the dry season are here very manifest.

Of the four plots comprising the experimental area, two, Plot 1 and Plot 3, have been manurially treated. Of these the Road-scrapings Plot shows up best, the improvement being especially marked in the damp corner of the field which is included in this plot. In this particular spot is to be seen a rank growth of Cocksfoot, Timothy, and Yellow Oat-grass—the two first-named grasses attaining a height of over 2 feet. This fact is strikingly illustrative of the effect which might be anticipated from a good and constant supply of moisture to a portion of a soil which appears to be for the most part considerably over-drained. The growth generally over this plot is improved, and contrasts strongly with that of the unmanured plot. A grass which seems to have been specially favoured is Hard Fescue.

But it is noteworthy that Cocksfoot, which last year was the

most abundant grass in the field, has (save in the damp referred to above) markedly decreased in numbers, and appears to have gone under in the struggle for moisture. With a wet or even a normal—season Cocksfoot would probably reap, but at present it is displaced by weeds and such grass as Yorkshire Fog. Though apparently not so sensitive as Cocksfoot to varying conditions of moisture, Timothy, it is noted, does not make so good a show as it did last year.

The soil, judging from the analysis of Dr. Voelcker, exhibits a lack of fertility, and it seems, therefore, to be merely a question of season whether the pasture shall come forward or go backward.

On Plot 3 the growth is very meagre, and much inferior to that on Plot 1. The proportion of Clover, it is true, seems to have been increased; but several of the patches are considered by the occupier to mark the spots where the head-roads scrapings were placed previous to being distributed.

With regard to Plot 4, I am unable to observe that all the seeds have germinated, though the occupier tells me that he thought he could detect some young grass a little while ago.

There does not appear to be much alteration in the relative proportions of the grasses, with the exception of those referred to above. Thus, Foxtail is still a scarce grass, but Hard Fescue may be said to have increased generally. Yellow Oat-grass is plentiful in the pasture. The proportion of worthless weeds seems to have been increased through the dryness of the season, and moss is very plentiful.

The grasses, generally, have the appearance of having run up to flower, with the consequence that there is no depth of bottom.

I am informed that nothing has been done to check the escape of water from the soil.

The occupier wishes to qualify the statement that this field is reckoned to carry four head of cattle. Two cows would be nearer the mark.

REPORT OF THE CONSULTING BOTANIST.

Date of visit, October 20th, 1896.

The rains had considerably altered the aspect of the field since Mr. Rowbotham's visit. The two plots to which manure was applied were somewhat improved. None of the seeds sown in spring produced plants. The field is very much overgrown with worthless weeds, so that nearly half of the area is occupied by them. It does not seem to me possible that any manure treatment can within a reasonable time convert the field into a fair pasture. The weeds are chiefly Ox-eye Daisy, Carna-

REPORT OF THE BOTANICAL VISITOR.

Date of visit, June 30th, 1896.

Across the eastern ends of the plots, salt, at the rate of 4 cwt. per acre, was sown in a strip 1 chain in width; and across the western ends of the plots peat-moss manure, at the rate of 10 loads per acre, was applied in a strip 1 chain in width. By this arrangement a central strip was left comprising the middle portions of the manured plots, untouched by the salt or dung. I will refer to this central strip first.

The lime was applied with the two-fold object of improving the mechanical condition of the soil, and of checking the spread of Bent-grass. Here, as elsewhere, the dryness of the season has prevented the proper action of the lime, with the result that its presence has tended to discourage growth generally by increasing the dryness of the soil. There is no appreciable decrease of Bent.

Basic slag has been tried in two proportions on Plot No. 2. There can be no question that the larger application (viz. 8 cwt. per acre) has produced the best effect. The clovers specially have been stimulated, and there is a remarkable increase over last year in the proportion of Yellow Suckling.

Plot 3 has been treated with superphosphate, but in different proportions as regards the two half-plots—the idea here (as with the slag) being to remedy the deficiency of phosphoric acid in the soil. To the second half was added kainit, at the rate of 2 cwt. per acre. The growth generally on this plot is good. I do not notice much difference between this and the basic slag; but I do observe a difference between Plots 2 and 3 and the Nothing Plot, both as regards the height and closeness of the herbage, and the proportion of Red and White Clovers.

Next, as regards the strip sown with salt. The proportion of Bent is appreciably decreased over the whole of this strip, but the decrease is most marked where the salt crosses the Lime Plot. Thus, what the lime alone has failed to produce, the lime *plus* salt seems to have accomplished.

A very marked improvement has been effected by the liberal dressing of dung, crossing the ends of the plots. The dung *plus* superphosphate is unquestionably the best; and when crossing the Nothing Plot shows up well, though it should be remarked that hereabouts the soil is normally more moist, with a consequent inducement to ranker growth.

The order of results may thus be stated as follows:—

1. Dung Strip.
2. Basic slag (Plot 2), 8 cwt.
3. Superphosphate (Plot No. 3), 4 cwt.
4. Lime (Plot No. 1).

Though not included in the original experiment, I may draw attention to the vigorous growth induced by the application of guano, one bag of which was applied (at the same time as the other manures) to a strip 1 chain in width running beside the salt strip, from one end of the experimental area to the other. There is more Hard Fescue to be seen here than elsewhere in the field; but I thought I could also detect an increase in the quantity of Bent-grass.

REPORT OF THE CONSULTING BOTANIST.

Date of visit, December 5th, 1896.

The pasture had been well fed throughout the summer, and the plots were nearly all reduced to a uniform condition. The farmyard manure showed the most growth. The application of salt produced no appreciable effect, while the various manures alone, and the Nothing Plot were equal, except perhaps the Basic Slag Plot, which was slightly the best of the four plots.

REPORT OF THE STEWARD IN CHARGE (MR. W. ASHCROFT).

I laid out the plots on this site and superintended the sowing of the manures on December 6th, 1895, with the exception of the lime, which was applied the day following, and the dung, which was put on about three weeks later.

Put on thus early, it was but natural that the only two portions to which nitrogen was given, viz., the strip sown with guano, and the dunged strip crossing the plots, should show the marked contrast spoken of by Mr. Rowbotham in his Report, particularly if the poor condition of the field is borne in mind; the rainfall in the first three months of the year being sufficient to wash the nitrogen out of both well into the soil, and favour an early luxuriant growth, more particularly as the manure was short, well-rotted, peat-moss dung.

Unfortunately the early start of grass was not maintained. The dry weather characteristic of the spring and early summer of 1896 set in, and this farm missed having, in any appreciable quantity, some good rain which fell somewhat partially in the district during the fourth week in June and the middle of July. Therefore, though the field was not cut for hay till August, the thin clay soil, which a dry season does not by any means suit, produced but a scanty crop, viz., about three small waggon loads from 11 acres; and the plots, though their distinctive characters are described by Mr. Rowbotham in his Report of 26th June, were disappointing, and, in proportion to their early start, still more disappointing in the

amount of increase looked for from the dunged and guano strips.

After the dry season was over, the rainy weather from the middle of August to the end of October favoured the growth of grass "anywhere and everywhere," and brought everything up, as one might say, to the "same level." When I saw the plots at the end of November, the second-growth herbage had been eaten down very evenly, having been principally grazed with sheep; the Lime Plot still showed some traces of having dried up rather more than the others during the drought; the Basic Slag Plot (8 cwt. per acre) showed the nicest bottom; and the plots generally showed a slight improvement over the unmanured part. After discussing the experiment with Dr. Voelcker, we decided to repeat the salt dressing on half the strip to which salt was applied last spring, and to add the remaining 4 cwt. slag to the half plot which only received 4 cwt. It is to be hoped that a favourable summer in 1897 will show more interesting results. At all events, we may look to see what are the second-year effects of the dung and the slag, whether the lime will come into play, and what effect salt may have on this soil in a wetter season.

EXPERIMENTAL SITE NO. 6, AT YEOVILTON, SOMERSET.

Owned by J. K. D. Wingfield Digby, Esq., M.P., and occupied by Messrs. E. and E. Haine, of Yeovilton, Ilchester, Somerset.

EXPERIMENTS ON "TEART" LAND.

a. Manurial Experiments—in large field.

An area of 4 acres has been treated thus:—

<i>Dung.</i> 15 loads per acre.	<i>Basic Slag 8 cwt.</i> <i>and Kainit</i> 2 cwt. per acre.	<i>Nothing.</i>	<i>Road-Scrappings</i> <i>and Lime.</i>
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4 Plots—1 acre each.

b. Experiment on Soft Water versus Hard Water. Small field adjoining large field.

c. Experiment on Early and Late feeding of grass ("Teart" land)—in a third field.

REPORT OF THE BOTANICAL VISITOR.

Date of visit, June 25th, 1896.

A slight alteration (shown in the above diagram) was made with regard to the plan of treatment of this site as set forth in the Society's 'Journal' (4th Series, vol. vi. p. 210), the plot dressed with road-scrapings and lime being placed last (*i.e.* fourth) instead of third, and the Nothing Plot third instead of fourth.

The manured plots having been fed by sheep, a proper examination and comparison of the herbage has been rendered difficult. The effects of the drought are strikingly shown in this field, the soil being parched and fissured, and the herbage burnt. In places the basic slag is actually to be seen covering the surface of the ground where it was sown.

So far as it is possible to report upon the site under existing circumstances, the Dung Plot unquestionably takes the foremost place. The application of dung was made in order to remedy the marked deficiency of nitrogen in the soil; and, despite the dryness, and the fact that the sheep pastured here have eagerly seized upon all the tender growth they could find, the dung dressing has produced a marked improvement in the vegetation.

The effect of the road-scrapings and lime, Plot 4, has been to increase the dryness of the soil, so that there is actually more vegetation to be seen on the Nothing Plot than is to be seen here.

The application of both the dung and the basic slag has caused an appreciable decrease in the proportion of moss; this is most marked in the Dung Plot.

Last year Cocksfoot was the most abundant grass in the field; but here, as elsewhere, it has apparently gone under in consequence of the drought, so that at the present time it is chiefly to be seen in the hollows between the ridges. Hard Fescue is still very abundant, having apparently suffered little from the dryness.

In the hurdled space the only differences to be observed at the present time, as compared with last year, are that Meadow Barley and Soft Brome-grass have made their appearance—the former in considerable quantity. There is also a small amount of Annual Poa to be seen. Here, as in other localities which I have visited, the season appears to have specially favoured the development of Yellow Oat-grass. The proportion of the other grasses and weeds is about the same as last year.

REPORT OF THE STEWARD IN CHARGE (MR. T. DYKE).

The portion of the field selected for manurial experiments is decidedly "teart," and the object was to ascertain whether this quality is due to herbage, and whether it can be improved by manurial treatment. There was in April scarcely any difference perceptible in the plots resulting from the treatment, and the exceptionally dry summer has rendered the experiments nugatory.

After careful consideration a field (Ordnance Map, No. 165) was selected as the most suitable in the neighbourhood for carrying out Experiments *b* and *c*.

On April 15th, 1896, I wrote to Dr. Voelcker as follows:—

"We found what seems to be a suitable field, which I propose to divide as shown on the enclosed trace, if you approve; this will involve a comparatively short length of hurdling. The object is, as I understand, to test the effects of 'teart' land at the worst time of year on animals supplied with the ordinary Lias water in one plot, and the purest water which can be obtained—rain water, if possible—in the other; this, I think, could be done in Plots A and B, A being supplied by water issuing from a spring into the pond through which the dividing fence runs; B being supplied with soft or rain water.

"As regards the other experiment, animals put in Plot C at a late period of the year (after frosts had set in), with the Lias water from the pond, would be tested as against those which had been in A. Two animals would be required for each plot. It seems to me that we could get as good results from six animals in three plots as from eight in four, two being about the normal quantity for the acreage of each plot. Mr. Haine wished me, on behalf of the Society, to purchase animals and sell them again when we had done with them; but I have obtained his consent to use animals which he would purchase if he received proper compensation for their—almost certain—deterioration."

The extremely dry summer prevented sufficient growth of grass to test satisfactorily the effect of immature grass on the stock, and also caused Messrs. Haine to sell the Devons purchased for this experiment for want of feed for them; and when the autumn rains had produced a sufficient quantity of grass both Messrs. Haine and Mr. Dampney considered it was too late to get any satisfactory results, and the experiment was deferred.

Samples of the grass and the water were sent to Dr. Voelcker at various times, but the analyses did not point to any marked differences or peculiarities in the chemical composition of the

grass taken at various periods, or to the water, either from the well, or from the adjoining stream, being exceptionally hard and heavily loaded with saline ingredients. Both waters were much alike in composition.

Mr. Rawlence has most kindly given much assistance in making the experiments on Mr. Digby's land, and offered to lend iron fencing for parting the three plots in No. 165. Mr. Rawlence says there is an enormous quantity of "teart" land in the neighbourhood which produces a large quantity of grass, and the scouring can be neutralised to some extent by the use of cotton cake.

He does not think the Lias water can account for the scouring on "teart" land, for some of the "mild" and safest land in the neighbourhood is watered by the river and drains in connection with it which are fed from Lias lands.

The late Dr. Augustus Voelcker made a very exhaustive Report in the Society's 'Journal,' vol. x., Part I., 1862, on "Teart Lands"; the conclusions he arrived at being as follows:—

1. Lias clays contain nothing injurious to vegetation.
2. These clays contain abundance of mineral plant food.
3. The Lias waters are very hard, many possessing medicinal properties, and no doubt scour cattle drinking them.
4. In some exceptional cases land scours on account of being insufficiently drained.
5. In most cases the evil can be traced to the immature condition in which the herbage is consumed or made into hay.
6. This immature condition is most notable during the drier summer months, when the young herbage grows luxuriantly.
7. The immature condition in which herbage on scouring land is consumed is principally caused by the peculiar character and relation of the subsoil to the surface soil of scouring land.
8. No positive evidence exists showing that the complaint is due to a particular species of herb.

Suggested Cures.

1. It is highly advisable to cut off the supply of hard Lias springs and to provide soft drinking water.
2. In some exceptional cases more efficient drainage will mitigate the evil.
3. It is desirable to keep cattle from scouring pastures in those months of the year when young herbage appears very luxuriant.
4. Haymaking should be delayed.

REPORT OF THE CONSULTING CHEMIST (DR. J. A. VOELCKER).

The extension on my father's earlier experiments is that we are actually putting stock on to the land in question, and endeavouring to ascertain if the supposed bad character of the pastures is really justified.

Also we are doing what was not then done, viz., examining the grass of the field at different stages, and not merely (as then) the hay.

Lastly, we are putting to the test the suggestions which he made as to possible ways of getting over the evil.

Last year's drought, however, was fatal to any result being forthcoming, as I found nothing amiss with grass or water, and in such a year "scouring" would, I take it, be unknown.

CONCLUDING REPORT BY THE ACTING-CHAIRMAN OF THE EXPERIMENTS COMMITTEE (MR. ACLAND).

The results of the experiments during the past year seem to admit of one or two general inferences, which perhaps may be said rather to corroborate opinions already generally entertained, than to lead to any new conclusions.

1. The old-fashioned farmyard manure stands out "*facile princeps*" in the production of an abundant crop, though with regard to the feeding value of such crops we have probably much to learn. It seems clear—as might have been anticipated from the Rothamsted results—that the coarser grasses prosper under its influence to an extent which is, perhaps, somewhat detrimental to the progress of the finer and some other more valuable grasses. Undoubtedly, also, a great portion of the benefit derived from the use of farmyard manure was really traceable to its power of *retaining moisture*, which in such a season as the last was of the highest importance.

2. Evidence has in most cases been forthcoming to show that, at any rate in such a season as we have passed through, the drying effect of lime may be so prejudicial as seriously to modify any improvement that, from the chemical point of view, might be expected to result from its use. In some cases there seemed reason to believe that the lime may have had positively a burning effect, though the scorching heat of the sun rendered it impossible to pronounce with certainty as to this.

3. The property very generally attributed to basic slag, of tending to expedite the growth of Clover (and especially White Dutch), has been very generally exhibited; and in regard to last year there can be no question that lime applied in the form of basic slag has been decidedly preferable in comparison with other methods of application.

4. The following paragraph, extracted from one of Mr. Rowbotham's reports, is here inserted as bearing the character of a general inference which is worth recording:—

"Possibly there is some truth in what the farmers say respecting the herbage of their meadows—viz.: that there are 'seasons' for particular grasses, clovers, and weeds; and although I have not heard one of them advance any reason for this varying proportion among the herbage, the explanation is perhaps to be found in the fact that under peculiarly favourable conditions a greater proportion of the seed sown by certain grasses or clovers germinates in the following spring. Or, again, under such conditions as have characterised the present season, the grasses have a tendency to 'rush up' to flower, so that, possibly, many ordinarily late-maturing grasses will have already matured and shed their seeds by the time the hay is cut. It is difficult otherwise to explain the prevalence of certain grasses in certain years, such, for instance, as the general predominance of Yellow Oat-grass in the present season. Other grasses, such as Cocksfoot, on the other hand, may apparently be temporarily displaced by adverse conditions with regard to moisture. The consideration of these facts appears strongly to tend to the conclusion that it is unwise to judge the character or capabilities of a pasture from the growth of a single season."

Although the disastrous drought of the past summer imparted a character to the Society's experiments that was certainly neither intended nor anticipated, the Committee are nevertheless far from regarding the experience thus gained as valueless.

They hope and believe, moreover, that, with the experience already obtained, they will be able in succeeding years to record some very tangible results from these experiments. They venture also to hope that not only will those who have kindly interested themselves and assisted in the present attempt to elucidate the improvement of permanent pasture, continue to do so, but that they may be able to inspire others with a similar interest and zeal, so that the scheme may be still further extended.

LIST OF PLANTS REFERRED TO IN THE FOREGOING REPORTS.

Grasses.

Annual Poa (<i>Poa annua</i>).	Soft Brome-grass (<i>Bromus mollis</i>).
Bent (<i>Agrostis vulgaris</i>).	Sweet Vernal-grass (<i>Anthoxanthum odoratum</i>).
Cocksfoot (<i>Dactylis glomerata</i>).	Tall Fescue-grass (<i>Festuca elatior</i>).
Foxtail (<i>Alopecurus pratensis</i>).	Timothy, or Cat's-tail (<i>Phleum pratense</i>).
Hard Fescue (<i>Festuca duriuscula</i>).	Yellow Oat-grass (<i>Avena flavescens</i>).
Hassock-grass (<i>Deschampsia cespitosa</i>).	Yorkshire Fog (<i>Holcus lanatus</i>).
Meadow Barley (<i>Hordeum pratense</i>).	
Smooth Meadow-grass (<i>Poa pratensis</i>).	

Clovers and Weeds.

Carnation-grass (<i>Carex panicea</i>).	Red Clover (<i>Trifolium pratense</i>).
Creeping Buttercup (<i>Ranunculus repens</i>).	Self-heal (<i>Brunella vulgaris</i>).
Field Daisy (<i>Bellis perennis</i>).	White, or Dutch Clover (<i>Trifolium repens</i>).
Hawk's-beard (<i>Crepis virens</i>).	Yarrow (<i>Achillea Millefolium</i>).
Mouse-ear Chickweed (<i>Cerastium tri-viale</i>).	Yellow-rattle (<i>Rhinanthus Crista-galli</i>).
Ox-eye Daisy (<i>Chrysanthemum Leucanthemum</i>).	Yellow Suckling (<i>Trifolium minus</i>).

XIII.—*The Society's Dairy and Farriery Schools.* By THOS. F. PLOWMAN, Secretary and Editor.

DAIRY SCHOOLS.

DURING the past year the Society has continued its efforts to promote practical education in Dairying through the medium of its Schools, and its activity in this direction has been stimulated by the calls which have been made upon it by public bodies.

BUTTER SCHOOLS.

The travelling Butter School which the Society had conducted on behalf, and at the cost, of the Somerset County Council for the past five years, was carried on up to the end of March last, when, the County Education Committee having come to the conclusion that the demand for migratory instruction of this kind had been sufficiently met, it was discontinued.

Since 1893 the Society has conducted a similar School for the Devon County Council, and this is still being successfully carried on.

County.	Centre.	No. of days School was opened.	No. of Pupils.		
			For 10 days.	For shorter periods.	Total.
Somerset	Haselbury	21	21	..	21
„	South Petherton	11	7	2	9
„	Cross, Compton Bishop ..	21	16	6	22
Devon	Moreton Hampstead ..	21	19	..	19
„	South Tawton	21	19	4	23
„	Chagford	21	23	..	23
„	Drewsteignton	21	21	4	25
„	Holsworthy	31	34	..	34
„	Uffculme	21	20	..	20
„	Rewe	21	19	1	20
„	Newton Poppleford ..	41	40	..	40
Totals		251	239	17	256

The tabular statement on page 160 shows the number of pupils at each centre visited by the Somerset and Devon Schools during 1896.

The instruction has been given by the Society's teachers, Misses N. Angus, M. Smart, M. S. Benjafield, and A. Barrett; and practical addresses have been delivered to each class of Students by the Society's Dairy Schools Steward (Mr. G. Gibbons), who personally supervises the Schools.

CHEESE SCHOOLS.

Two Cheese Schools have been carried on by the Society during the past year, one on behalf, and at the cost, of the Somerset County Council, and the other on similar lines for the Dorset County Council.

The Somerset School was held at Cossington, near Bridgwater, upon the estate of E. G. Broderip, Esq., the occupier of the farm and premises being Mr. W. W. Tucker.

The Dorset School was held at Milton, near Gillingham, upon the estate of Mr. G. B. Matthews, the occupier of the farm and premises being Mr. G. Parham.

The usual arrangements were made with the tenant in each case for the use and control of his dairy, the supply of milk from his cows, and the boarding and lodging of pupils in his house.

Both Schools were supervised by Mr. G. Gibbons, the teacher at the Somerset School being Miss E. J. Cannon, and at the Dorset School Miss M. J. Cannon. The Schools had also the advantage of the advice and experience of Mr. H. Cannon, of Milton Clevedon.

The following table shows the number of pupils at the two Schools :—

County.	Centre.	No. of days School was open.	No. of Pupils.					Total.
			5 weeks.	4 weeks.	3 weeks.	2 weeks.	1 week.	
Somerset ..	Cossington (near Bridgwater.)	214	1	10	..	3	8	22
Dorset	Milton (near Gillingham.)	209	..	22	1	3	6	32

Messrs. Hill, Bros., of Evercreech, bought the whole of the cheese at each School, and the quantity and prices realised were as follows:—

Place.	Number of Draft.	Weight.		Total weight.	Price per 112 lbs.		Milk used.	Average price per 112 lbs.				
		cwt.	qrs.	lbs.	cwt.	qrs.	lbs.	s.	d.	galls.	s.	d.
Cossington, } Bridgwater }	First (April 1 to 30)	33	2	22				54	0			
	Second (May 1 to June 30)	78	0	5	215	0	24	66	0	25,554	66	
	Third (July 1 to Aug. 31)	64	3	20				71	0			
	Fourth (Sept. 1 to Oct. 31)	38	2	5				72	0			
Milton, Gil- } lingham }	First (April 6 to May 16)	48	2	9				42	0			
	Second (May 17 to July 13)	50	2	0	172	0	12	65	0	21,130	60	
	Third (July 14 to Aug. 31)	34	2	11				67	0			
	Fourth (Sept. 1 to Oct. 31)	38	1	20				70	0			

An Experiment Station was, as usual, attached to the Somerset School, the cost, with the assistance of a Government grant, being defrayed by the Society. Detailed accounts of the work carried on there during the past year will be found further on in this volume.

The Somerset Cheese School for this year will be opened early in April at Long Ashton, near Bristol, at Fenswood Farm, in the occupation of Mr. Richmond Harding, as tenant under Sir J. H. Greville Smyth, Bart.

BUTTER AND CHEESE SCHOOLS.

Since the establishment of its Schools in 1888 and up to the end of 1896, the Society has, in conjunction with County Councils and other public bodies for whom it has acted, expended the sum of 21,127*l.* in the promotion of technical instruction in dairying through the medium of these Schools. Even this sum by no means represents the total expenditure upon these Schools, for it does not include the cost of hiring and fitting up buildings for the travelling Butter Schools, and other liabilities undertaken by local bodies—such as the County and District Committees—co-operating with the Society. During the period named, 160 centres in sixteen different counties have been visited by the Society's migratory Butter Schools, and 2,919 pupils have received instruction therein. Stationary Cheese Schools have been located for seven months each at eight centres, viz. seven in Somerset and one in Dorset, and have been attended by 379 pupils.

PRIZES FOR DAIRY PUPILS.

At the Society's Annual Exhibition, which opens on May 24 at Southampton, special Prizes (particulars of which will be found on pages xci., xciii. of the Appendix to this volume) will be given for Cheese and Butter made by Students who have attended any of the Society's Schools.

FARRIERY SCHOOL.

The Travelling Farriery School, carried on by the Society for Somerset County Council, has been well attended by pupils during the past year. With the exception of a fortnight's break at Christmas, it has been continuously at work since its establishment in April, 1895.

ATTENDANCE OF PUPILS.

The accompanying table shows the places visited and the number of pupils at each since the starting of the School:—

Centre.	Year.	School		No. of Pupils.
		Opened.	Closed.	
iton	1895	April 8	Aug. 5	32
ington	"	Aug. 7	" 31	7
erton	"	Sept. 2	Sept. 14	3
elismcombe	"	" 16	Oct. 25	12
iton	"	Oct. 28	Dec. 6	12
ster	"	Dec. 9	" 20	5
ford	1896	Jan. 6	Jan. 17	5
ewater	"	" 21	March 14	13
er Stowey	"	March 16	April 10	8
.. .. .	"	April 13	" 24	5
.. .. .	"	" 27	June 2	7
onbury	"	June 3	" 16	2
ott	"	" 17	" 30	4
ott	"	July 1	July 14	4
port	"	" 15	Aug. 29	10
ster	"	Aug. 31	Sept. 26	7
d	"	Sept. 28	Oct. 9	5
kerne	"	Oct. 12	Nov. 14	10
ock	"	Nov. 16	" 28	4
il	"	" 30	Dec. 23	8
				163

The School has not only been a success in point of attendance, the pupils have shown a genuine and intelligent interest in their work, and have not hesitated to express themselves as thoroughly satisfied with the instruction given.

MODE OF INSTRUCTION.

The School is supervised by the Society's Farriery Steward (Colonel Best), and the Veterinary Surgeon attached to it is Mr. G. H. Elder, M.R.C.V.S., of Taunton. The latter lectures to the classes upon the anatomy of the horse's foot, and upon other subjects connected with farriery, and acts as general adviser upon the work of the School. One of these lectures was attended by thirty smiths, three of whom came fourteen miles, six eight miles, and others six miles, in order to be present. A vote of thanks to the Lecturer was proposed and seconded by working smiths, who, in doing so, said that the School was, to use their own words, "the most practical and useful thing going."

The instructor is Mr. W. B. Blackall, master smith, late of Coleshill, Highworth, Wilts, who, previous to his appointment to the post, had won twenty-one prizes and several high commendations at shoeing competitions held by the Bath and West and Southern Counties Society and other Societies.

The instruction is restricted to those who are already in the trade. This is essential, not only to avoid jealousy and ill-will, but because the instruction can only be given effectively, in the necessarily limited number of lessons, to those who have already acquired a fair knowledge of ordinary shoeing. The aim is to improve old hands rather than to teach beginners.

A course of instruction, the fee for which is 2s. 6d., consists of ten lessons. These are given at six o'clock in the evening, as the pupils, having their ordinary work in the daytime, cannot conveniently attend before that hour. A class consists of four pupils, and, as the same pupils cannot always attend night after night, it is generally arranged to have two different classes, which are taken on alternate nights. The pupils are shown the correct method of shoeing every kind of horse they are likely to have to deal with, and how to adapt shoes to abnormal conditions of feet. A typical collection of shoes and hoofs is always on exhibition at the School, and the explanations given of them are much appreciated.

Forges, iron, and all the necessary tools and appliances are provided by the Society, and are contained in a van, which is moved about from place to place, so that the School may be brought within easy reach of the smiths of any particular locality in the county.

The Steward of the School (Colonel Best) writes:—"If the School has done no other good, it has at least taught smiths and apprentices that the vicious system of rasping the wall of the foot in order to make it look neat, and of paring the foot

with the drawing-knife, is absolutely wrong and against the laws of nature; and this is a great step in advance."

PRIZE COMPETITIONS.

At the conclusion of a certain number of courses in a district, a competition for prizes and certificates is held, open exclusively to pupils from the classes, and, in order to encourage regularity of attendance, only those who have attended at least eight times are entitled to compete.

The Registration Committee of the Farriers' Company admit winners of First Prizes in these competitions to the Official Register *free of charge*, on their satisfying the judges that they have a fair knowledge of the structure of the horse's foot, while other competitors who satisfy the judges of their competency are admitted on payment of the usual fees (*viz.*, £1 for masters, and 5s. for doormen).

During the past year competitions were held at Taunton, on January 20, and at Bridgwater, on July 20. At Taunton twenty-four pupils took part in the competitions, and the prize-winners were:—

FOR NAG HORSE SHOEING.

1st prize—J. Kerslake, Williton.

2nd prize—A. Sheppard, Dunster.

FOR CART HORSE SHOEING BY SENIORS.

1st prize—H. Kerslake, Sampford Brett.

2nd prize—J. J. Kerslake, Stogumber.

FOR CART HORSE SHOEING BY JUNIORS.

1st prize—W. J. Thomas, Sampford Brett.

2nd prize—E. Sawyer, Sampford Brett.

At Bridgwater, sixteen pupils took part in the competition, and the prize-winners were:—

FOR NAG HORSE SHOEING.

1st prize—Jas. Davey, Bridgwater.

2nd prize—Jas. Ridge, North Petherton.

FOR CART HORSE SHOEING.

1st prize—H. R. Glover, Nether Stowey.

2nd prize—Geo. Herrin, Bridgwater.

Certificates were also awarded to each of the prize-winners and to three competitors in each class who were commended.

At the Shoeing Competitions of the Somerset Agricultural Association held in connection with the Annual Show in May last, both the first prizes, one second, and one third prize, were won by competitors who had been pupils of the School, whilst six other pupils were either very highly or highly commended.

XIV.—*Observations on Cheddar Cheese-Making. Report for 1896.*

By F. J. LLOYD, F.C.S.

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INTRODUCTION.

WHEN in the summer of 1891, I was asked by the Bath and West and Southern Counties Society to carry out observations on the manufacture of Cheddar Cheese, it was decided that the first object of such experiments should be—

(a) "The formulating of a complete scheme of investigation of the science which underlies the existing practice of the best cheese-makers."

I was also instructed to ascertain the:—

(b) Variations in quality of milk from cows feeding in different pastures.

(c) Causes of defects in cheese-making from quality of milk, &c.

(d) Effect of temperature in ripening of cheese.

It is only necessary to recall these stated objects of study to show that at the time only one thought was dominant in the minds of those who prompted the investigation, namely, that the problems to be solved were all of a purely chemical nature. As time has gone on and the facts ascertained by these observations have increased in number, it has been clearly seen that the

science of cheese-making deals not merely with chemical questions, but also, to a large extent, with bacteriological questions. By degrees the most important chemical points were cleared up. The influence of the proper development of lactic acid, commonly known as "acidity," in each and every stage of the process of manufacture, was demonstrated, and a method of rapidly and accurately estimating this acidity was introduced. This apparatus has slowly come into use, not merely among makers of Cheddar Cheese, but also among those who are producing other varieties.

The almost universal belief that the soil and herbage of certain localities rendered cheese-making practically impossible in such localities was investigated. Soils were analysed by the Society's Consulting Chemist, Dr. Voelcker, and the pastures most thoroughly investigated by the Society's Consulting Botanist, Mr. Carruthers, F.R.S.; but invariably without any explanation being found for the firm and widespread conviction that such soils and pastures were not suited for cheese-making.

Then, when the third object of investigation began to receive attention, it was found that defects in cheese-making would arise, now and again, in dairies presided over by the most skilled and careful makers. Thus while on one day a cheese of excellent quality would be produced, on the next day there might be one of very inferior quality. And this by the same maker, with milk the quality of which (chemically speaking) was similar to that of the former day, while the temperatures, system of making, development of acidity, and every other condition, so far as could be determined, were identical for the two cheeses. Investigation soon proved that there were other than chemical agents at work during the making of a cheese, whose influence for good or harm might be quite as powerful as, if not more powerful than, the skill of the maker.

Bacteria, those infinitely minute vegetable growths which are now being found to play so important a part in both the welfare and ills of mankind, were not absent from the milk and dairy, and were fighting either for or against the skill and intelligence of the cheese-maker. The study of these bacteria therefore received attention; some which played an injurious part in the manufacture of cheese were gradually discovered, and one or two of these were traced to their source. Thus it was ascertained that trouble invariably resulted from contamination of the milk with dirt prior to its reaching the dairy, and that inferior cheeses were frequently due, not to any want of skill on the part of the cheese-maker, but to want of cleanliness

on the part of the milkers. Dirty hands to milk with, and dirty cows to milk, cause more inferior cheese of every description than all other causes put together.

Such, briefly, had been the outcome of the work done when my last Report was written. Thus the examination of the bacteria in milk was forcing itself prominently forward as the line along which future progress must be looked for. There still remained, however, some few points in connection with the chemistry of cheese-making to investigate, *e.g.* the chemistry of the ripening of cheese, and to these subjects attention was given in 1896.

The experiments were carried on at the Somerset Cheese School of the Bath and West and Southern Counties Society. It has been the custom for some years past to have the School located in a different part of the county each year. The desirability of a permanent School was brought before the Somerset County Council; but they decided not to have such a School for the present, a decision which, in my opinion, is not calculated to best promote the cheese industry of the county.

I.—CONDITIONS UNDER WHICH THE CHEESES WERE MADE.

(a.) THE FARM AND DAIRY.

The dairy of Mr. Tucker, of Trivett's Farm, Cossington, near Bridgwater, was selected as the site of the School in 1896. Cossington is said to be a place in which it is difficult to make good cheese, and certainly if the troubles met with at the School are such as are common to the district, Cossington well deserves its reputation. However, it is satisfactory to know that, in spite of these troubles, Miss Cannon's skill in the manufacture of Cheddar Cheese enabled her to produce an article which fetched very good prices throughout the season.

The village of Cossington is situate upon comparatively high ground, on one of those outcrops of the blue Lias formation which rise here and there from the flat valleys or moors of the north-west of Somerset. The fields on which the cattle feed are mainly down on the moor where the soil is clay, and where peat abounds, or is intermingled with the soil. The fields on the higher level are few and comparatively small, and here the soil partakes of the blue Lias character, and the herbage is what is known as "teart," or "scouring." The cows were on one or

more of six fields during the season, which fields, for sake of future reference, may be numbered 1 to 6 :—

No.					Name.
1	..	..	..	..	Home.
2	..	..	..	..	Newlands.
3	..	..	..	..	Stubclose.
4	..	..	..	..	Hatches.
5	..	..	..	..	Holywell.
6	..	..	..	..	At Farm.

Water was supplied to the cattle by means of dykes or ditches running through the fields, the water in which came from a spring in the higher ground of Cossington. In spite of the drought there was always sufficient water, though, as might be expected, it was not plentiful.

The dairy was a room in one corner of the house, two sides of which were formed by outside walls facing north and west, and each having a small window. Both of these windows opened on to a part of the farmyard, which was surrounded by horse boxes, cattle stalls, piggeries, &c., though the latter were not used during the time of the cheese-making season. It is most extraordinary that any farm should be so planned that no breath of air can come into the dairy without passing over horses, cattle, or pigs, and their droppings.

The air in the pig-styes was carefully examined and found to contain organisms which have been proved to be detrimental to cheese-making. Last year I showed that even the droppings of fowls, if allowed to dry and become disseminated in the air, would give trouble, and the same may be said of all *fæcal* matter. It is indeed remarkable that landlords, who ought to know better, both allow farm-houses, where cheese-making will be the staple industry, to be built which are utterly unsuited to the purpose for which they are intended, and neglect to improve such buildings when they exist.

Unfortunately the dairy was small, so that it was not possible to make two cheeses in it simultaneously. Another room was intended for the making of experimental cheeses, but it was not found suited to the purpose, so that fewer experimental cheeses were made than would otherwise have been the case. It will be essential to remedy this in the future, for further progress must depend very largely upon the results of experimental cheeses. Moreover, it is scarcely necessary to point out that unless such cheeses are made under conditions favourable to their production, it would not be just to compare the results so obtained with cheeses made under the most favourable conditions.

(b.) THE STOCK AND YIELD OF MILK.

The work of the School commenced on the 1st of April, and there were then fifty-one cows in-milk.

These were already out on the pastures, thirty in Newlands, receiving hay in addition, and twenty-one on Stubclose receiving, owing to the shortness of keep there, not only hay but also cotton-cake (about 6 lbs. each per day).

The number of cows were increased by 14th of May to fifty-eight, and in the meantime had been changed into other fields. On the 9th of June there were sixty-two cows in-milk. This number continued in-milk up to 21st of September, when ten of the cows were milked only once a day; and on October 4th the number in-milk dropped to forty-nine,

On 27th of August there were ten feeding on "aftermath" and receiving cake; and on 12th of September there were twenty cows cake-fed. Thus, owing to the drought, some of the cows had to be fed on cake during the greater portion of the season.

Milk Yield.—The greatest amount of milk yielded was on the 4th of May, when fifty-five cows gave 175 gallons, or an average of 3.18 gallons per cow. Even when the number of cows had risen to sixty-two on the 9th of June, the maximum volume of milk obtained was only 163 gallons. Comparing these figures with the 1895 results, it is interesting to note that in that year the maximum yield was given twelve days later, on 16th of May, and only reached 3 gallons per cow. We thus see how early was the season of 1896.

Quality of the Milk.—The following table shows the average composition of the milk which was yielded at Cossington, and enables us to compare it with that produced in preceding years. The analyses were made during the first ten days of each month.

It will be seen from the table opposite that the milk at Cossington was exceptionally rich in fat during the whole season, and that the casein in the milk, while normal during April, May, and June, fell during the months of July, August, and September below the normal. A careful study of these results will show that the solids other than fat in the milk also fell during these later months below the normal. I have found this to be a somewhat characteristic result of an exceptional drought and scarcity of food, especially with individual cows, some appearing to be affected far more than others.

**AVERAGE COMPOSITION OF MILK for each MONTH during the
YEARS 1891-96.**

Month.	Year.	Locality.	Total Solids.	Fat.	Casein.
			per cent.	per cent.	per cent.
January	1892	Axbridge	11.75	3.06	2.35
	1893	Butleigh	11.89	3.09	2.43
	1894	Mark	12.31	3.29	2.42
	1895	Haselbury*	12.65	3.70	2.43
	1896	Cossington	12.75	3.83	2.43
February	1892	Axbridge	12.04	3.12	2.55
	1893	Butleigh	12.01	3.05	2.59
	1894	Mark	12.51	3.35	2.73
	1895	Haselbury*	12.58	3.39	2.60
	1896	Cossington	12.78	3.70	2.64
March	1892	Axbridge	12.20	3.17	2.65
	1893	Butleigh†	12.03	3.08	2.65
	1894	Mark	12.52	3.40	2.69
	1895	Haselbury*	12.56	3.51	2.58
	1896	Cossington	12.59	3.57	2.64
April	1892	Axbridge	12.20	3.21	2.66
	1893	Butleigh†	12.14	3.20	2.49
	1894	Mark	12.52	3.47	2.64
	1895	Haselbury*	12.68	3.60	2.67
	1896	Cossington	12.61	3.66	2.58
May	1891	Vallis	12.61	3.87	2.76
	1892	Axbridge	12.28	3.38	2.65
	1893	Butleigh†	12.14	3.19	2.77
	1894	Mark	12.78	3.70	2.76
	1895	Haselbury†	12.82	3.80	2.68
June	1896	Cossington	12.73	3.83	2.66
July	1891	Vallis	13.00	4.13	2.99
	1892	Axbridge	12.56	3.57	2.87
	1893	Butleigh†	12.53	3.53	2.95
	1894	Mark	13.05	3.93	2.83
	1895	Haselbury*	13.03	3.94	2.91
August	1896	Cossington	13.19	4.31	2.71
September	1891	Vallis	13.81	4.75	3.21
	1892	Axbridge	13.13	4.00	3.08
	1893	Butleigh†	13.49	4.30	3.14
	1894	Mark	13.46	4.39	2.95
	1895	Haselbury*	13.70	4.55	2.92
October	1896	Cossington	13.38	4.41	2.85

For first and third weeks in month.

† For first week in month only.

(c.) COMPARISON OF RESULTS OBTAINED, 1891-96.

The following table gives an epitome of the results which have been obtained during the past six years:—

AVERAGE RESULTS OBTAINED, 1891-96.

MONTH.	VALLIS, 1891.				
	Vol. of Milk.	Cheese taken from Press.	Cheese when sold.	Shrinkage in ripening.	Cheese from one gallon of Milk.
	galls.	lbs.	lbs.	lbs.	lbs.
April	81	73	69	4	·85
May	119	117	111	6	·93
June	132	132	123	9	·93
July	112	114	107	7	·96
August	91	99	91	8	1·00
September	79	87½	82	5½	1·04
October	52	64	59½	4½	1·14

MONTH.	AXBRIDGE, 1892.				
	Vol. of Milk.	Cheese taken from Press.	Cheese when sold.	Shrinkage in ripening.	Cheese from one gallon of Milk.
	galls.	lbs.	lbs.	lbs.	lbs.
April	79	70	66	4	·83
May	109	102	94	8	·86
June	127	122	113	9	·90
July	116	115	108	7	·93
August	100	102½	94	8½	·94
September	84	91	85	6	1·01
October	58	68	62	6	1·07

MONTH.	BUTLIGH, 1893.				
	Vol. of Milk.	Cheese taken from Press.	Cheese when sold.	Shrinkage in ripening.	Cheese from one gallon of Milk.
	galls.	lbs.	lbs.	lbs.	lbs.
April	106	96	89	7	·84
May	149	142	132	10	·88
June	141	130	121½	8½	·85
July	134	129	122	7	·91
August	134	131½	124	7½	·92
September	102½	109½	104	5½	1·02
October	68	80	77	3	1·13

AVERAGE RESULTS OBTAINED, 1891-96.

MONTH.	MARK, 1894.						
	Vol. of Milk.	Cheese taken from Press.	Cheese when sold.	Shrinkage in ripening.	Cheese from one gallon of Milk.	Average No. of Cows.	Average yield of Milk per head per day.
	galls.	lbs.	lbs.	lbs.	lbs.		galls.
April	103	101	96	5	·93	33	3·12
May	148	148	140	8	·94	50	2·96
June	140	141	132	9	·94	51	2·74
July	129	131	124	7	·96	52	2·48
August	112	118	112	6	1·00	52	2·15
September	100	112	106	6	1·06	53	1·89
October	74	87	81	6	1·09	53	1·40

MONTH.	HASLEBURY, 1895.						
	Vol. of Milk.	Cheese taken from Press.	Cheese when sold.	Shrinkage in ripening.*	Cheese from one gallon of Milk.	Average No. of Cows.	Average yield of Milk per head per day.
	galls.	lbs.	lbs.	lbs.	lbs.		galls.
April	126	126	118	8	·94	46	2·74
May	175	167	159	8	·91	61	2·87
June	183	168	159	9	·87	70	2·61
July	146	148	138	10	·95	70	2·09
August	139	152	138	14	·99	70	1·99
September	113	124	119	5	1·05	69	1·64
October	76	90	87	3	1·14	65	1·17

MONTH.	COSSINGTON, 1896.						
	Vol. of Milk.	Curd taken from Press.	Cheese when sold.	Shrinkage in ripening.	Cheese from one gallon of Milk.	Average No. of Cows.	Average yield of Milk per head per day.
	galls.	lbs.	lbs.	lbs.	lbs.		galls.
April	163	136	130	6	·80	51	3·19
May	166	164	157	7	·94	56	3·00
June	153	152	142	10	·93	59	2·6
July	137	139	131	8	·96	60	2·3
August	107	114	110	4	1·03	60	1·8
September	77	86	80	6	1·04	60	1·3
October	56	66	61½	4½	1·10	50	1·1

* This was excessive in April, July, and August, partly owing to the heat of the season, partly to the cheese not being sold so soon as in former years.

II.—THE RECORD OF OBSERVATIONS.

In order to carry on the research work entailed by these observations, it has become quite impossible to devote a day to that recording of mere facts which in the past formed the main feature of the work. The record, therefore—which embraces sixty observations and fourteen analytical determinations a day—was only kept during the first ten days of each month. The average results obtained are given in the annexed table on page 175.

(a.) SOME GENERAL CONCLUSIONS.

These observations have now been made for five years, and the results tabulated each year. The principal conclusions which could be deduced from these observations have been noticed in previous Reports, and have been many and important. In fact, I am of opinion that the chemistry of cheese-making has been very completely laid bare by this work. It is necessary to study the results obtained during that period to be convinced that the one paramount secret of success is to obtain the right amount of acidity in the milk, whey, and curd at the critical points in cheese-making, viz. before adding the rennet before drawing the whey, and before grinding the curd. The test of the accuracy with which this is accomplished may be found in the acidity of the liquid from the press. No figure can be more instructive to the would-be scientific cheese-maker than the average acidity of the liquid from the press given in the table. It is not as though these averages covered wide divergences. I have looked carefully through the figures for each day in the season, and find that, during a whole month, the acidities of the liquid from the press would only vary within 0·1 per cent. of the average.*

In view, then, of the great uniformity of these results over a period of five years, I have come to the conclusion that a little more light is likely to be thrown upon the problem of cheese-making by continuing these laborious observations month after month.

There may, indeed almost certainly will, occur times when from some special difficulty arising, it will be necessary to interrupt through the whole set of observations in order, if possible, to find the cause of such troubles. Moreover, as a foundation for the systematic study of any system of cheese-making, six months' observations would be invaluable, and, so far as my experience goes, it is impossible to suggest any necessary addition to the

* This is the secret of how to obtain cheese of uniform quality.

Month.	RELATING TO EVENING'S MILK.										MORNING'S MILK.		Total Volume of Milk.	Mixed Milk.		Acidity of Whey before breaking.	Acidity of Whey put aside.	Acidity of Whey when drawn.	Acidity of drainings from piled Curd.	Acidity of drainings from Curd before grating.	Weight of Curd when vatted.	Acidity of Liquid from Press.*	Weight of Curd taken to Cheese Room.	Loss in Press.	Weight of Cheese when sold.																																
	At night.					In morning.					Volume.	Acidity.		Proportion of Rennet added.																																											
	Temp. of Dairy.	Temp. of Milk.	Acidity.	Temp. of Dairy.	Temp. of Milk.	Acidity.	Per cent.	galls.	Per cent.	galls.					Per cent.											not to be used.																															
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
April	62	81	184	61	75	194	69	181	131	190	8000	132	169	247	90	134	1-01	126	8	118	126	8	118																																		
May	77	66	87	186	63	66	71	199	89	177	166	189	8000	137	—	207	301	92	175	1-01	164	11	157																																		
June	72	68	88	172	66	69	73	185	85	166	157	175	8000	140	—	223	329	85	167	96	155	12	145																																		
July	73	68	87	196	67	69	72	208	69	190	142	198	8000	146	—	203	304	93	153	1-00	142	11	137																																		
August	62	68	86	182	66	68	72	196	57	177	119	185	8000	138	—	178	228	99	134	96	124	10	119																																		
September	36	67	83	180	66	67	74	192	46	177	82	185	8000	134	—	201	318	93	97	1-01	90	7	83																																		
October	27	65	80	185	63	66	71	200	37	181	64	189	8000	139	—	199	271	99	79	90	74	5	70																																		

* This determination was made every day, and the average given is that of the whole month.

MONTHLY AVERAGES OF RESULTS OF ANALYSES.

MONTH.	COMPOSITION OF MIXED MILK.							COMPOSITION OF WHEAT.			COMPOSITION OF CURD.			
	Water.	Solids.	Fat.	Casein.	Albumin.	Sugar.	Ash.	Solids.	Fat.	Ash.	Water.	Solids.	Fat.	Ash.
April. . .	87-25	12-75	3-88	2-43	3-39	5-46	64	7-48	32	45	40-66	59-34	32-05	1-78
May . . .	87-22	12-78	3-70	2-64	3-86	5-41	67	7-21	26	48	40-72	59-28	30-64	2-05
June . . .	87-41	12-59	3-57	2-64	3-85	5-36	67	7-12	21	41	41-33	58-67	29-88	1-83
July . . .	87-39	12-61	3-66	2-58	3-84	5-34	69	7-17	25	49	42-07	57-93	30-87	2-01
August . . .	87-27	12-73	3-83	2-66	3-86	5-17	71	7-00	34	50	41-65	58-35	31-09	1-93
September . . .	86-81	13-19	4-31	2-71	3-88	5-06	73	7-03	34	54	40-57	59-48	32-85	1-86
October . . .	86-62	13-38	4-41	2-85	4-40	5-02	70	7-13	33	51	41-40	58-60	31-69	2-05

though slight modifications would be needed for other systems of cheese-making.

I am convinced that, in the majority of cases, the chemical composition of the milk has very little influence upon the quality of the resulting cheese. In other words, whether a cheese will be bad or good will not depend upon the chemical composition of the milk. Moreover, I have been surprised to find that it is not necessarily milk rich in fat that makes a "fat" * cheese. The cause of this "fat" cheese is due to changes produced in ripening, which have yet to be studied. But that rich milk, *i.e.* milk rich in fat, will, other things being equal, make a richer cheese than poor milk hardly need be stated. Hence, it is foolish to abstract fat from milk which is to be used for cheese-making.

(b.) **RENNET.**

It will be noticeable that the proportion of rennet used at Cossington has been constant from the 1st of April to the 10th of October. It has been measured, in every case, in one of the rennet measures which were made specially for the purpose in 1892. The introduction of these measures, which are now placed upon the market by Messrs. Townson and Mercer, of Bishopsgate Street, London, may be said to be one of the practical results arising from the cheese observations. If, remembering this constant proportion of rennet, we study the average composition of the milk, we find that the proportion has not needed altering, even though the milk has varied considerably in composition, containing in April 3·83 per cent. of fat and only 2·43 per cent. of casein; in June, 3·57 per cent. of fat, and 2·64 per cent. of casein; and again in October, 4·41 per cent. of fat, and 2·85 per cent. of casein. These figures afford fairly conclusive evidence that the quantity of rennet necessary depends more on the strength of the rennet than on the composition of the milk, and that where it is found necessary to materially alter the quantity of rennet used, it is probably due to some change in the rennet which causes it to lose its strength.

(c.) **DETERMINATIONS OF ACIDITY.**

In my last Report I stated that some experiments had been made with a view of trying to estimate more precisely the acidity of the milk, &c. This year, in order to determine whether such tests would throw any light upon some of the

* A technical term, used to denote a cheese which cuts with somewhat the consistency of butter.

more delicate changes which take place in the milk, the acidity determinations have been made with a solution only one-fifth of the strength of that ordinarily used. After special experiments had been made on the subject, this was found to be the best strength to use; it has thus been possible to estimate the acidity to $\frac{1}{30}$ th part of 1 per cent. And the results obtained show very clearly the difference between the evening's milk when brought into the dairy and after standing through the night.

But the use of such a solution is attended with difficulty, and cannot be recommended to anyone except a trained chemist. Only after considerable experience can a perfectly uniform tint be regularly obtained in the substance tested. The difficulty of obtaining this tint led to an investigation into the influence of the strength of the phenolphthalein solution, or "indicator," on the results obtained. This was found to be considerable, and the best results were obtained only when an indicator was used containing 0.2 grammes of phenolphthalein to the 100 c.c. of solution. I mention this owing to a growing demand which here now is for the acidity apparatus, so that those who provide the solutions may make the indicator of this strength, for even when using the ordinary solution of soda, the strength of the indicator will slightly affect the results obtained.

ACIDITY GOING BACK.

On comparing the figures, which show the average acidity of the drainings from the curd before grinding with those of the acidity of liquid from the press, it may be seen that during the months of August and October the acidity of the liquid from the press was less than the acidity of the last drainings from the curd when in the cooler. Now this is exceptional. It has been noticed on isolated occasions in former years, but never to such an extent as to affect the averages. Numerous attempts have been made to discover the reason for this, but up to the present without success. It is almost invariably associated with a taint in the curd, so that it is probably the result of bacterial changes. Its practical importance is this, that when such taint arises it is necessary to develop in the curd before vatting apparently *more acidity than is desired in the liquid from the press*, otherwise the cheese will be tainted and inferior.

(d.) THE ACIDITY OF CURD.

From time to time cheese-makers have said to me, "What we want is some instrument that will tell us the acidity of the curd."

Now, it has been pointed out in previous Reports that the acidity of the liquid from the press seemed to afford sufficient indication of the acidity of the curd for all practical purposes. At the same time I could not forget that in my early work (see Reports for 1892 and 1893), when attempting to obtain tests of the acidity of the curd, neither uniform results nor figures which lent themselves to any explanation could be obtained. The subject was left in obedience, owing to more urgent questions having to be settled. But now, wishing to clear up all chemical problems relating to the manufacture of cheese, the question once more arose in my mind, is there an acidity or acid condition of the curd, independent of and different to the acidity of the liquid, by which that curd is impregnated?

Experiments were made to determine the acidity of the curd by the following four methods:—

a. Two grammes of curd were cut up into fine pieces, placed in a flask with distilled water, and allowed to stand in a warm place, or gently heated, and after standing for twelve hours the acidity of the liquid was determined.

b. Thinking that the warmth employed in method "*a*" might cause the production of lactic acid, 2 grammes were treated similarly to the above, but the solution immediately boiled so as to destroy the bacillus acidus lactici.

c. Two grammes of curd were rubbed up in a mortar with distilled water into fine particles, and the acidity thereof immediately determined.

d. Two grammes of curd were cut into fine pieces, placed in a flask with water, and an excess of caustic potash solution, and the liquid boiled. Subsequently the free potash was determined, so that the amount of potash consumed showed the acidity of the curd, soluble in alkali.

The following table gives some few examples of the results obtained, and also the acidity of the liquid from press on the same dates.

DATE.	Acidity by " <i>a</i> ."	Acidity by " <i>b</i> ."	Acidity by " <i>c</i> ."	Acidity of Liquid from Press.	Acidity by " <i>d</i> ."	Acidity due to Curd.
1896.						
June 6	·85	·87	·89	·88	6·05	5·16
" 24 .. .. .	..	·90	·97	·95	5·37	4·40
" 26	·94	·95	·99	·99	5·37	4·38
July 1	1·04	1·04	1·05	1·04	5·30	4·25

From these results, which have been confirmed by numerous other experiments, we learn that method "*a*" does not succeed

obtaining all the acid liquid out of the curd. That method *b*," while it improves the results, owing probably to the contraction of the curd by heat expelling its acid contents more thoroughly, still fails to give quite so high results as method *c*," which has consequently been adopted throughout the season. It is, fortunately, more simple and more rapid than either "*a*" or "*b*."

Comparing the results obtained by method "*c*" with the acidity of the liquid from the press, it will be seen that they are practically identical, so that this method of analysis appears to give us merely the same acidity as that of the liquid which is in the curd. As the curd contains only 50 per cent. of liquid at most, we might expect the figures to be one-half those of the liquid from the press. Why they are identical with the liquid from the press, I am as yet unable to explain. It has been noticed that after estimating the acidity by method "*c*" there is a secondary reaction, which takes place slowly, and is more difficult to determine, but which gives almost constant results. So far as I am able to judge at present, this is due to acid salts present in the curd.

The result obtained by method "*d*" is very different. Here, in addition to the acidity soluble in water, we have an acidity which we must assume to be due to the solid substance of the curd insoluble in water. By deducting from this total acidity the acidity due to the soluble portion, we should obtain the true acidity of the insoluble portion or casein.

The acidity of the casein, as determined by method "*d*," fluctuates from day to day in a most remarkable manner. This will be seen by reference to the following table. These results do not correspond in any way with the acidity of the liquid by which the curd is surrounded. Neither are they in proportion to the amount of pure casein present in the curd. The fat in the curd would, by being saponified, use some of the potash; but again we find no relation between the fat and this supposed acidity of the casein.

DATE.	True Acidity of Curd.	Acidity of Liquid from Press.	Percentage of Casein present in Curd.	Percentage of Fat present in Curd.
1896.				
July 2	5·45	·89	24·58	30·42
" 3	3·42	1·06	24·85	31·05
" 4	4·25	·98	25·54	29·96
" 5	3·73	1·02	24·93	31·07
" 6	4·32	1·03	24·94	32·76

The determination with which the results obtained seem mostly to accord is that of the acidity of the liquid from the press. But, without quoting figures, it may be stated that, though very numerous experiments have been made to try and discover if there were any relation, no *constant* relation could be discovered between these two determinations.

Tabulating the figures (which we may term "casein acidities") obtained this year, and comparing them with results obtained in 1892—the only year for which the necessary data exist—we obtain the following results:—

TABLE SHOWING AVERAGE "CASEIN ACIDITY" OF CURD DURING THE FIRST 10 DAYS OF EACH MONTH.

		1892.	1896.
June	.. ..	4.27	4.39
July	.. ..	3.77	4.06
August	.. ..	3.33	3.39
September	.. ..	3.62	3.43
October	.. ..	3.16	3.47

These results are of sufficient interest to warrant further investigation. They seem to prove beyond doubt that curd when vatted is an acid solid, surrounded by an acid pickle. Also, that the acidity of this solid varies not only from day to day, but in different months, decreasing during July and August, but increasing subsequently. How far the acidity of the solid, as distinct from the liquid, may affect the ripening or quality of the cheese remains to be determined.

Curd is one of those complex organic substances about which chemists know very little. In 1892 I showed that, during the process of cheese-making, a large quantity of lime was extracted from the curd not only in the whey and in each of the drainings from the curd on the cooler while it is developing acidity, but also from the curd when finally placed in the press. Now, as this lime would exist in the milk, either in solution or in combination with the casein, if in solution it would be present in the whey, while if in combination it would be present in the curd. The analyses of whey show that only about two-thirds of the mineral matter of the milk are present in it, so we

ist conclude that the remainder is in the curd. From a series of analyses made of the liquid from the press and of the curd, I find 0·5 per cent. of lime in the former, and nearly 1 per cent. in the latter. The only possible supposition is that it is combined with the casein. It would, therefore, appear that casein is an acid substance, is combined with the lime in the curd, and as lactic acid is produced in the curd it takes away this lime and leaves an acid casein behind. If this be the right explanation, then it is evident that curd, in addition to the acidity which it possessed from the lactic acid it contained, would have an acidity of its own, proportionate to the amount of lime which had been taken away from the casein. Otherwise it would have a constant acidity in proportion to the quantity of pure casein present. As it is found not to have a constant acidity, the results of the above quoted experiments add to the first assumption, so that the practical cheese-maker is justified in his request for an instrument that will test the acidity of the curd.

(e.) LIQUID FROM PRESS.

Complete analyses were made of six samples of this liquid taken at different periods. The average of the six analyses is as follows :—

Water..	..	..	..	..	..	82·23
Fat ..	..	..	..	..	..	3·48
Lactic Acid	..	..	..	..	..	·99
Albumin ..	..	..	..	..	..	·76
Sugar ..	..	..	..	..	..	3·38
Mineral matter (mainly Salt) ..	..	..	..	..	..	9·16
						17·77
						100·00

The percentages of lactic acid, of albumin, and of mineral matter fluctuate but slightly. The percentage of fat is able to greater fluctuation, while that of sugar is the most irregular.

(f.) THE COMPOSITION OF THE CHEESES.

The cheeses when sold have been found in the past to vary in composition so slightly that it was not deemed necessary to make very many analyses in 1896. The chief fluctuations, between different years, depend upon the quality of the milk, and upon the time which elapses between the making and selling

of the cheese. The following table gives the results of the analyses.

PERCENTAGE COMPOSITION OF CHEESES WHEN SOLD. 1896.

—				Moisture.	Fat.	Casein, &c.	Mineral Matter.
April	23	..	..	36.05	29.52	30.53	3.90
"	24	..	..	36.85	30.45	29.35	3.85
"	27	..	..	36.65	27.01	31.89	4.45
May	7	..	..	33.60	32.20	30.30	3.90
"	18	..	..	35.70	33.28	27.22	3.80
"	20	..	..	35.40	30.52	30.28	3.80
June	6	..	..	35.00	29.97	31.33	3.70
"	11	..	..	34.30	33.32	28.68	3.70
"	20	..	..	34.70	32.49	28.91	3.90
July	2	..	..	37.40	32.40	26.30	3.90
"	8	..	..	35.80	32.94	27.46	3.80
"	14	..	..	35.90	33.32	26.48	4.30
"	22	..	..	36.00	32.67	27.23	4.10
August	7	..	..	36.80	33.04	26.16	4.00
"	9	..	..	37.40	32.13	26.47	4.00
"	14	..	..	38.40	32.20	25.70	3.70
"	25	..	..	38.50	32.73	25.17	3.60
September	4	..	..	35.30	31.92	29.28	3.50
"	9	..	..	35.80	34.29	26.51	3.40
"	23	..	..	36.00	35.10	25.40	3.50
October	2	..	..	36.00	33.00	27.50	3.50
"	10	..	..	36.60	32.45	27.55	3.40

(g.) THE FAT OF WHEY AND CHEESE.

In trying to clear up all the problems connected with the acidity of milk, whey, curd, &c., the question arose in my mind—does the fat ever exhibit an acid reaction? In all the estimations of fat this substance is isolated and weighed in little glass flasks. Experiments were made, first by mixing it with hot water, to dissolve out any acid soluble in water that might be present; but only a trace could be found. Then the fat was treated with alcohol, to dissolve out any acid soluble in alcohol, and the acidity of the solution was estimated. Both in the fat of whey and in that of curd an appreciable amount of acid substance was found. I have calculated the acidity present as oleic acid, and the following table gives the average results obtained from about ten determinations made each month in both whey and curd:—

PERCENTAGE OF OLEIC ACID IN FAT FROM WHEY AND CURD.

	—	Whey.	Curd.
May	.. .. .	..	4·10
June	.. .. .	30·74	8·84
July	.. .. .	31·20	6·94
August	.. .. .	16·18	3·10
September	.. .. .	17·79	3·55
October	.. .. .	19·08	3·94

The results vary with each cheese in a somewhat remarkable manner, for which fact an explanation has yet to be sought. One experiment has been made by determining the acidity or oleic acid in the fat from a cheese when ripe to compare with that found in the curd at the time of vatting. The results are as follows :—

				Per cent. Oleic acid.
On Sept. 7th, in curd	..	..	..	1·98
On Nov. 25th, in cheese	..	..	..	2·23
On Jan. 28th, 1897, in ripe cheese	..	..	..	2·23

Practically no change seems to be produced in the fat by ripening, which confirms results to be subsequently referred to.

I am unable to trace any relation between the acidities produced during cheese-making and these oleic acid determinations, so that it would appear that the fat in the original milk varied in nature from day to day ; a subject which will receive attention in the future.

III.—THE RIPENING OF CURD.

One of the original objects of the Experiments was to discover, if possible, what changes take place during the ripening of curd and its conversion into cheese. Every one knows how very different in texture and flavour newly-made curd is from ripe cheese. Moreover, it is generally known that a good curd will result in a good cheese, while a tainted curd will result in a cheese of poor flavour. It has been shown by the observations in former years that while some taints diminish during the ripening of the curd, others are augmented. I have found this year that while, during the first three months of the ripening of the curd, some taints appear to be overcome or checked by the changes taking place, they subsequently find in the ripe cheese a new stimulus to growth, and in a month or two after being ripe the cheese is unfit for consumption. There is every reason to suppose that the ripening of cheese depends

on the growth and chemical changes produced by bacteria. For it is well known that if a cheese is kept at a low temperature, such as retards the growth of bacteria, ripening takes place slowly. On the other hand, when a cheese is kept at a higher temperature, more favourable to the growth of bacteria, ripening takes place rapidly. Hence the investigation divides itself into two parts, first, what bacteria are at work in the ripening of a cheese, and secondly, what chemical changes are brought about by their growth?

The first of these questions had received my attention to a certain extent in each preceding year, and the result of my observations was that, among bacteria, the *bacillus acidilactici* played the most important part, judging from the number which were found in every cheese, their invariable presence, and my inability to discover any other organism which was always present. That this work is still incomplete I fully recognise. That other organisms are present in cheese is undoubted, and what part these may play in the ripening process remains to be discovered, as also the effect of those organisms which, during ripening, produce various well-known taints.

The second subject, namely, what chemical changes take place in the ripening of curd, having received no previous attention, it was decided to commence work in this direction.

Only those who have studied chemistry can at all appreciate the difficulties of such an investigation, and it is far from an easy task to clearly explain the work which has been done. Curd when taken to the cheese-room consists of water, fat, a small amount of milk sugar, lactic acid, albumin, and mineral matter (including the salt added to the curd), and lastly, "curd" itself, or the "casein" of the milk in a solid and insoluble form.

That cheese when ripe had lost moisture and become dry was evident. Some workers said that the fat was increased, others denied this, while the changes which had taken place in the casein were but little understood.

My first object was to devise a method of analysis which might throw some light on the changes that had taken place. The primary question was, did the ripening of the cheese render the casein or any other substance soluble in water?

Every one knows the striking difference in appearance between the white solid interior and the yellow semi-liquid exterior of a half-ripe Camembert Cheese. Such a cheese affords a striking example of change due to ripeness, and my first experiments were made therewith. As difficulties were met with and overcome, the system of analysis was extended, and at last a complete system of examination has been drawn up. But owing to the small sample of cheese which can be obtained from a boring,

and the minute amount of substances to be estimated, it was not always possible to carry out the complete scheme, nor yet to check figures which seemed doubtful. In spite of these drawbacks and the incompleteness of the results, I think they throw sufficient light upon the subject of ripening to justify publication. In the future I hope to obtain more perfect and complete results.

The analytical data are given in the table on page 186. For the information of those who may wish to apply this method of investigation to other cheeses, I will briefly describe the process adopted. In order to obtain accurate results, all other work must be put aside, and the various determinations must be made with the utmost rapidity compatible with accuracy. The solutions undergo rapid change, after which the results would be useless, and misleading. All the chemical solutions and apparatus must be scrupulously accurate and tested specially before commencing work.

The sample of cheese is cut up on a porcelain slab into minute fragments; these must be well mixed together and portions taken for each determination. As regards the first six estimations, the methods by which these are made are well known. No. 7 is obtained by rubbing up 1 gramme in a mortar with water, and the acidity is estimated as previously described for curd.

The soluble constituents are estimated as follows: 5 grammes of the sample are taken, rubbed to a thin paste with a little water in a porcelain mortar, and then transferred to a graduated glass cylinder (stoppered), and the mixture made up to 104 cubic centimeters. This will yield 100 cubic centimeters of solution. After repeated shakings, the mixture is allowed to stand until next morning, when it is filtered, and the determinations are immediately made in the filtered liquid. In these determinations the acidity is first estimated as usual, the portion taken for this estimation being then evaporated to dryness for the solids. I find that unless precaution is taken to first neutralise the solution there is a loss during evaporation.

No. 13 is estimated by Kjeldahl's method.

No. 14 by distillation, after making slightly alkaline.

No. 15 by titrating with standard sulphuric acid, using methyl orange as indicator.

No. 16 by distilling the solution used for No. 15 estimation.

After repeated investigations no fat has been found in the soluble constituents.

Some of the nitrogenous constituents are soluble in ether after the sample has been dried. Thus an attempt to estimate the fat in the cheese by drying with gypsum and then extracting

TABLE SHOWING THE COMPOSITION OF CHEESE AT VARIOUS STAGES OF RIPENESS.

No.		CAMEMBERT CHEESE.		CHEDDAR CHEESE OF APRIL 22.*			CHEDDAR CHEESE OF JUNE 4.†			CHEDDAR CHEESE OF SEPT. 7.	
		Unripe.	Ripe.	On April 22.	On July 7.	On Aug. 17.	On June 4.	On Aug. 5.	On Aug. 31.	On Sept. 16.	On Jan. 25, 1897.
1	Water	52.70	54.15	39.95	36.55	35.45	39.90	34.40	36.15	37.75	34.65
2	Solids	47.30	48.80	60.05	63.45	64.55	60.10	65.60	63.85	62.25	65.35
3	Containing:—										
4	(a) Casein, &c., by difference	21.87	22.52	30.78	31.20	31.75	30.80	30.60	30.75	33.16	34.54
5	(b) Mineral matter	21.93	22.88	26.57	29.30	29.15	27.30	30.95	29.15	24.14	26.76
6	{ In (a) Casein by estimation of N x 6½ }	3.50	3.45	2.70	2.95	3.65	2.00	4.05	3.95	3.95	4.05
7	{ Total acidity calculated as Lactic Acid .. .. . }	..	..	24.06	26.31	26.35	25.81	28.06	27.74	23.56	25.11
8	{ In (b) Lime .. .. . }	..	..	.95	3.78	3.15	1.03	2.50	3.24	1.53	2.07
9	{ Soluble constituents—Total solids .. .. . }	..	..	1.00	..	1.00	1.03	..	..	..	1.04
10	{ Acidity calculated as Lactic Acid }	.72	1.08	7.65	15.27	14.40	7.96	13.43	14.80	8.80	13.60
11	{ Mineral matter .. .. . }	..	..	1.44	2.16	2.16	1.80	2.84	2.52	.81	.85
12	{ Containing Lime .. .. . }	..	..	2.26	2.27	..	.96	..	..	..	3.40
13	{ Casein, by estimation of N x 6½ }	15.44	23.00	.67	8.69	..	.45	..	..	..	.89
14	{ Ammonia Volatile }	.54	.65	4.18	..	8.81	4.21	9.61	14.25	4.00	9.30
15	{ Neutralising power estimated as Ammonia }	.17	.44	..	..	..	.14	.24	..	.09	..
16	{ Volatile acids estimated as Butyric Acid }	.61	.72	.27	.41	.60	.34	.47	.60	.80	.84
				..	.53	..	..	..	..	..	..

* This Cheese was tainted, and subsequently became unfit for food. † Very good Cheese, in perfect condition on August 31st.

with ether in a Soxhlet apparatus, has yielded abnormally high fat results, while the estimation of the nitrogen in the extracted residue gives abnormally low casein (nitrogen) results.

Let us now turn to the results obtained. It is evident that, during ripening, practically no change takes place in the fat. It is not increased in quantity, and it is not rendered soluble. The most marked change is the gradual increase in the amount of solids rendered soluble (No. 9), while this soluble matter is seen to consist mainly of nitrogenous substances (No. 13). Side by side with this change, we have a constant increase in both the acidity of the cheese and in the soluble acids, and it is highly probable that this increase in acidity is the primary cause of the increase in solubility of the nitrogenous matter. In other words, that the principal factors in the ripening of cheese are the continued production of lactic acid, side by side with an increase in the solubility of the casein, or nitrogenous compounds. But this is not all. As the casein is rendered soluble, we find an increase in the amount of ammonia (No. 14), and also of substances like ammonia, having a basic action (No. 15). There can be little doubt but that these substances are products of the decomposition of casein, and, so far as my experiments go at present, the main portion of the casein appears to have been converted into peptones. I have not been able to find any soluble albumins.

Now, if we examine the figures relating to the cheese of 22nd April, we shall find on 17th August, when the cheese had commenced to go off, that, while the soluble acidity (No. 10) had not increased since July, the actual acidity of the cheese (No. 7) had decreased. The formation of lactic acid had ceased, and fermentation of the soluble constituents—in other words, decomposition—had set in. The germs of taint not yet destroyed in the curd, but apparently kept in check by the activity of the lactic acid bacillus, so long as that organism was at work, now, having the field clear, commenced anew their evil influence.

The very small quantities of butyric acid found, show that the conclusion at which I arrived from microscopical examination of the cheeses is correct, and that the butyric ferment plays practically no part in the ripening of Cheddar cheese.

On the other hand, the very considerable increase in the percentage of lactic acid in the cheese lends additional proof to my conclusion that it is the development of this acid which plays the most important part in the process of ripening.

Thus we get some slight idea as to the processes which are taking place during ripening, and their practical bearing is both interesting and important. So long as lactic acid is being developed in the curd, so long is the cheese ripening. When

the maximum acidity has been attained, it then begins to gradually diminish, decomposition sets in, and the taints, or rather the bacteria of taints, which up to this period seem to have been compelled to lie dormant, now re-assert their sway.

The process of ripening is followed by that of decay, the rapidity of which will depend mainly upon the impurity of the original milk and curd. Thus we understand why it is that cheeses which become ripe rapidly will not keep, while those made to ripen slowly do keep. We also understand why it is that cheeses which, if examined during the period of ripening, are found of fair quality, when kept over that period "go off," diminish materially in value, and become in time absolutely valueless.

Unless my facts or arguments are wrong, it is impossible to study these results without feeling that this question of the rapid ripening of cheese and its consequent results needs, indeed demands, serious consideration. Has not rapid ripening been carried too far? While, on the one hand, it is not imperative to make a cheese that requires a twelvemonth in which to ripen, is it desirable to make one which is ripe three months after it is made, and commences to show signs of decomposition a month later?

This first attempt to investigate the changes which take place during ripening only touches the fringe of the subject, yet already its practical bearing is evident, and I shall hope next season to make a further and more complete study thereof.

IV.—THE BACTERIOLOGICAL OBSERVATIONS.

THE MICRO-ORGANISMS IN MILK.

The importance of bacteria in dairying, especially in cheese-making, does not depend upon their size, but upon their number, and upon the rapidity of their increase. Thus the morning's milk of the 2nd of May, about three to four hours after it was drawn from the cow, that is soon after it came into the dairy, contained over 750,000 bacteria in one cubic inch. The number of bacteria in the evening's milk was not estimated, though practically this is of more importance, for it is mainly upon the increase in the number of these bacteria during the night that the next day's cheese-making will depend. How rapid this increase is, and how greatly the number of bacteria varies in the mixed morning's and evening's milk just before the rennet is added, can be seen from the following table. It contains the only three estimations made, and not merely a few selected

from a number. To indicate the importance and influence of these bacteria on the manufacture of the cheese, a few of the ordinary observations as to times and acidities are also given.

DATE.	Bacteria in one cubic inch of mixed Milk.	Acidity of Whey.	Acidity of liquid from piled Curd.	Increase in acidity while Curd piled.	Time Curd remained piled.	Acidity of liquid from Press.	Time Curd vatted (P.M.).
		per cent.	per cent.	per cent.	min.	per cent.	H. M.
Sept. 2, '96 ..	11,500,000	·205	·270	·065	25	·97	7 10
Sept. 10, '96 ..	57,700,000	·205	·300	·095	10	·91*	2 10
April 10, '96 ..	87,000,000	·185	·325	·140	5	1·02	1 4

* This curd, if it had been left some time longer before grinding, say 30 minutes, would probably have had about the same acidity as the other two.

It will be seen that the time of vating and the development of acidity in the piled curd are dependent upon the number of bacteria originally present in the milk.

It may be asked, how came these differences in the number of bacteria? The causes are several, but one of the principal is temperature. This is shown by the following figures:—

On the night of	Temp. of Dairy.	Temp. of Milk in morning.
1st to 2nd September	65-66	72
9th to 10th September	67-68	74
9th to 10th April	65-73	74

In face of these figures, it is scarcely necessary to point out how important it is to keep the evening's milk at a moderate temperature, in order to prevent the cheese-making on the following day being unnecessarily protracted.

They also enable us to understand why it is that the Cheddar cheese-makers in Scotland, who ripen the milk up to a fixed standard before renneting, succeed, as a rule, in finishing cheese-making early in the afternoon. And, if only a fixed standard of acidity were obtained in the mixed milk before renneting, cheese-making would be more regular.

The Bacillus Acidi Lactici.—Such is the name of the organism which has been most active in producing the results above referred to. It is to insure that these organisms shall produce a sufficient quantity of lactic acid in the curd that all the care as

to temperatures of scald, &c., on the part of the cheese-maker is directed. But, in previous Reports, I have several times drawn attention to the fact that bacteriological examination has shown the *Bacillus acidi lactici* to be also the organism present in greatest number in the ripe cheeses. In this respect, the work of 1896 confirms that of the past.

Moreover, the investigation during the past season into the ripening of cheese, from a chemical point of view, has strengthened the evidence in support of the assumption, that the ripening of Cheddar cheese is brought about mainly by the lactic acid bacillus. In making this statement, what organism do I refer to?

It is only necessary to have a mere smattering of bacteriology to know that many organisms have been described by various writers as lactic acid organisms, or such as are capable of producing lactic acid by the fermentation of milk sugar.

Of these the organisms most frequently referred to are as follows:—

1. *Bacillus acidi lactici*. Hüppe.
2. *Bacterium acidi lactici*. Grotenfeldt.
3. *Bacterium limbatum acidi lactici*. Marpmann.
4. *Micrococcus acidi lactici*. Marpmann.
5. *Sphaerococcus acidi lactici*. Marpmann.
6. *Micrococcus acidi lactis liquefaciens*. Krueger.
7. *Pediococcus acidi lactici*. Lindner.
8. *Streptococcus acidi lactici*. Grotenfeldt.

Putting aside, for the moment, No. 6, which has the characteristic property of liquefying gelatine, let us examine the information available concerning the others. They do not liquefy gelatine. They, one and all, are described as forming on gelatine plate-cultures, small circular colonies, white, porcelain white, grey, or tinged with yellow, while all are described as colonies having a smooth glittering appearance.

I can only find a statement of the time which they take to curdle milk for Nos. 3, 4, and 5, and these all require twenty-four hours. Here let me state that, according to Krueger, his *Micrococcus acidi lactis liquefaciens* takes no less than five days to curdle milk, so that it cannot be compared with any of the other organisms, and does not need our further attention.

For six years I have been constantly seeking to find these various lactic acid organisms and have failed to do so. During that time hundreds of cultures have been started, and every possible attempt has been made to obtain these organisms. At times I have thought that I had secured two or more varieties of lactic acid bacteria. But when cultures of these were made

simultaneously in or on the same media and kept under similar conditions as to temperature, &c., I have invariably found that my assumed varieties were in every respect identical. I am, therefore, forced to the conclusion that there is only one true lactic acid organism, which may be termed the *Bacillus acidi lactici*, ordinarily met with.

I have previously described this organism and the appearance of its cultures, but may now refer once more to these points. In shape it is slightly pointed at either end, and being only about one and a half times as long as it is broad, it does not really appear to be a bacillus, nor yet a coccus, which should be perfectly spherical. There ought to be some word to designate an organism so shaped; the word *micro-ovum*, which I applied to it some time since, has been stigmatised as neither Greek nor Latin, and a better substitute has been suggested in the word *micröon*.

This egg-shaped bacillus or micröon varies greatly in size, according, so far as I can judge, to the food which it is growing in or on, the age of the culture, and probably the number of bacteria present. Thus, in a young and vigorous growth it is quite large and distinctly bacillus shaped. With increasing age it diminishes in size, and in an old growth can scarcely be distinguished from a coccus. This is the form it mostly assumes in milk cultures, especially after they have curdled, also in cheese. Indeed, so very varied is it both in size and form that I have frequently felt certain of having obtained two distinct organisms, only, however, to be disappointed on further investigation.

In recently-made cultures it takes all the ordinary stains readily; but in old cultures it is more difficult to stain, and the stain is readily washed out. It will not retain the stain when subjected to Gram's method.

Not only does the organism itself vary in size, as above described, but a similar variation is noticeable in colonies of the *Bacillus acidi lactici* when growing on gelatine plate cultures. Two plates were inoculated from a pure culture of the bacillus, similar nutrient gelatine being used for each plate, and both being kept at the same temperature. The only difference was in the number of bacteria with which each plate was inoculated; in one case there were but few, in the other many, organisms. During the whole period of their growth the colonies on these plates were but slightly similar. Those few in number grew rapidly and attained considerable size, while the numerous colonies grew slowly, were minute, and never attained one-fifth the size of the other colonies. It would seem that in their growth, even on the solid gelatine, they either exhaust the material

around them of its nutriment, or else poison it, though in milk the influence of the lactic acid produced might account for their less vigorous growth. Yet how this can take place on a solid nutriment is difficult to understand.

It has, indeed, always been a puzzle to me how the bacteria in a colony on a plate obtain their nutriment at all. I have seen colonies of bacteria rising one millimètre* above the surface of the gelatine, so that the food which supplies the organisms on the top of such a colony is one thousand times their own length away from them. How does it reach them?

However, putting aside these interesting problems, let us return to the *Bacillus acidi lactici*.

A colony on the plate is identical in appearance with the description given by other observers of several of the previously mentioned varieties. It is a small, white, circular smooth growth, very rarely larger than a pin's head, though occasionally it will spread over the surface, and a thin circular disc, about one-tenth of an inch in diameter, be formed. When growing in the gelatine the colonies are spheres, or at times lemon-shaped, both forms being present. The colonies, sometimes mere specks, sometimes nearly as large as a pin's head, are rarely one millimètre in diameter.

A stab culture in gelatine produces a very thin growth of isolated colonies.

A surface culture on gelatine produces a delicate growth under one-eighth of an inch wide, made up of isolated colonies in places, but mainly consisting of a fairly uniform thin streak. On agar and on potato the culture is similar to that on gelatine, but not so vigorous.

When milk is inoculated with the organism it is coagulated into a solid mass in forty-eight hours at a temperature of 70° Fahr.

Such is a description of the only lactic acid-producing organism, in any way similar to the eight previously mentioned, that I have been able to find.

A Strepto-bacillus Acidi Lactici.—There is, however, one lactic acid-producing and milk-curdling organism which has occurred from time to time among the bacteria in milk, and which I have sometimes found in cream; a bacillus which grows together in long chains—i.e. a strepto-bacillus.

I am even inclined to think that there are two varieties of this strepto-bacillus, one taking only twenty-four to thirty hours to curdle milk, the other taking three to four days at a temperature of 70° Fahr.

* A millimètre is about $\frac{1}{25}$ th of an inch.

The individual bacilli are about one and a half to two μ long, with pointed ends, which give them an oval appearance.

Growing on a plate (gelatine) culture, the colonies cannot be distinguished from those of the ordinary *Bacillus acidi lactici*, being round on the surface, spherical or lemon-shaped when growing in the interior, white and small.

The streak culture on gelatine shows more marked difference. It is slower of growth, and forms a very thin streak, seldom one thirty-second of an inch wide, and it is made up of numerous, for the most part disconnected, colonies, whereas in *Bacillus acidi lactici*, as a rule, the colonies coalesce to form a uniform surface growth.

This strepto-bacillus appears to have a remarkable power of producing lactic acid, for, in several instances, milk was coagulated by it in from twenty-four to thirty hours. Here it may be well to explain the word "coagulated." When the milk sets in a solid mass, in which the whole of the water of the milk is contained, I term it coagulated. The true lactic acid-forming bacteria always produce this effect. There are other organisms which have the power of *curdling* milk, but they separate or precipitate the curd from a more or less clear whey. This distinction between the *Bacillus acidi lactici* and other organisms is very marked.

Cheeses were made from milk inoculated with this organism, and in these cheeses when ripe I was able to find the strepto-bacillus, as well as the ordinary *Bacillus acidi lactici*.

Overcoming Taints.—It has been stated that the milk at Cossington was frequently tainted. Three experimental cheeses were made with this strepto-bacillus, by placing a pure culture in the evening's milk.

The development of acidity by the morning was marked, and proceeded rapidly during the manufacture of the cheese. There is no method by which this development can be so well gauged as by comparing the acidity of the whey with that of the liquid coming from the piled curd after drawing the whey. The latter will, as a rule, show from 0.07 to 0.10 per cent. more acid than the whey, while in the case where the milk had been inoculated with the strepto-bacillus the difference was 0.17 per cent. or more.

All these three cheeses were pronounced to be of "very good" quality.

Another experimental cheese was made by inoculating the evening's milk with the ordinary *Bacillus acidi lactici*; but the result was not so satisfactory, owing to the milk on that occasion being badly tainted.

These experiments were generally made at a time when there
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was a taint in the milk, the object being to see whether any improvement could be brought about. The results would point to a considerable improvement being due to the introduction of the strepto-bacillus.

A Yeast.—During the continuation of these experiments there has been found in the milk, curd and ripe cheeses an organism which, from its immense size as compared with bacteria, I have designated a yeast. Noticing that this organism appeared to be frequently present in "very good" cheeses and not so frequently in inferior cheeses, I determined to make some inoculation experiments.

The organism is perfectly spherical; only rarely can a budding cell be observed. The cells do not show the variations of shape so frequently seen in most yeasts, nor do they remain united in chains or bunches. On plate (gelatine) cultures the colonies are mostly on the surface, being round, white, somewhat raised, and having a dull crinkled surface. Streak cultures on gelatine grow rapidly, and produce a thick white streak one-eighth of an inch wide, with dull and wrinkled surface, as if drawn up into folds. So far as I can judge from the description given by Duclaux, this yeast appears to be very similar to his *levure de lactose*.*

Three times experimental cheeses were made with this organism. Unfortunately, on the first occasion the milk proved to be highly tainted, the curd had a very strong faecal smell, and the cheese, though "fairly good," was not "very good." On the second occasion, the curd again had a slight taint, and the cheese, though good, was not of the best. On the third occasion the curd was not very good, though no marked taint was present; but the cheese was "excellent, with rich flavour, and mellow."

There thus appears to be some hope that this yeast improves the flavour of cheese, but it is evident, owing to the conditions having proved unfavourable for the experiments, that any conclusion would be premature.

I have also found a yeast very similar to the preceding, except that its cultures have a smooth and somewhat shining surface instead of the dry appearance of the above. Three experimental cheeses were made with this yeast, and all three were pronounced "very good" by the experts who examined them, though in two of the experiments the curd showed a taint when vatted.

Such were the ten inoculation experiments made with the object of trying to discover the bacteria or organisms which

* Ann. de l'Institut Pasteur, 1887.

roduce the highly desired combination of flavour and aroma characteristic of an excellent Cheddar.

In addition, experiments have been made with the view of determining the organisms injurious to the production of a good cheese.

The Vinegar Taint.—In 1894, when the School was located at Mark, I obtained certain organisms, somewhat characteristic cocci, which were also found at Cossington in the early part of 1896. They had not been present at Crewkerne in 1895. One of the taints which occasionally arose at Mark was distinguished as the "Vinegar" taint, the curd and whey possessing the smell of vinegar.

I was thus led to pay some attention to this coccus. It is exceptionally large, does not form chains, but is frequently found in pairs; the adjacent sides of the two cocci being so flattened that they look like one large organism with a dividing line* separating it into two rounded end cones.

Growing on the plate (gelatine) culture the colony is very small and perfectly spherical. In course of time, growth being very slow, a pit-like cavity of liquefied gelatine is noticed, at the bottom of which lies the little colony. Examined under the microscope at this stage it is seen to have partly lost its clear circular edge, which is now slightly irregular. The colony is opaque, no internal structure is visible, and it possesses a slight yellow colour. Later on, it seems to burst, and particles float out into the liquid gelatine. It is one of the most slowly liquefying organisms I have met with. It retains stain by Gram's method.

A stab culture in gelatine, after some time, begins to show liquefaction, which at the surface gradually extends to the sides of the tube, and the liquefied portion takes the shape of a sac, at the bottom of which is a white or slightly yellow deposit, while the liquid gelatine is slightly cloudy.

The organism when grown in milk slowly produces a curdling effect, and the precipitated curd takes a characteristic pinkish tinge.

On agar an ochre-coloured growth is formed, and on potatoes a light ochre-coloured growth. Experiments were made with this organism in the usual manner, and the vinegar taint was obtained. The cheese when ripe was not good, and had a wrong flavour.

A second experiment was made, the milk being divided into two parts, one inoculated, one not inoculated; and again the

* This under the microscope is a clear unstained space, the organisms being deeply stained.

inoculated milk produced an inferior cheese to the milk not inoculated.

As to the origin of this micro-coccus. Fortunately, owing to its power of retaining a stain when treated by Gram's method, which by far the greater number of organisms found in milk are not able to do, it was comparatively easy to examine various probable sources of contamination. The coccus was soon found in cow's dung, and so long as it gave trouble in the dairy it was always to be found in this material. Then came a period when the coccus was no longer found in the curd. Again the cow's dung was examined from time to time, but none of the cocci could be discovered. Towards the end of the season the organism again made its appearance in the curd. Once more the dung was examined, and again the coccus was found in it. There can be little doubt but that its presence in the milk and curd was accounted for, as several other organisms may be, by want of cleanliness, and the remedy is evident. But from a scientific point of view this subject raises another and more interesting problem, how came the micro-organism into the dung?

Ropey Milk Bacteria.—The season was characteristic, bacteriologically, for many reasons. Among others, for the frequent presence of organisms which when grown in milk give it a slimy consistency, or produce what is known as "ropey" milk.

The organism which possessed this power to the greatest extent was a coccus, which grows mostly in pairs, diplo-cocci, and does not retain stain by Gram's method. On gelatine plate cultures the colonies are fairly large, circular, dirty-white in colour, and opaque. A streak culture on gelatine produces a rapid growth, white, thick, and with smooth shining surface.

This organism when grown in milk causes the latter to thicken and become slimy, and subsequently a glutinous material appears to settle out of the milk.

An experimental cheese was made with milk inoculated with this organism. The curd was good, and the cheese very good. It is thus satisfactory to know that one of the slime-producing organisms causes no injurious effect on the cheese. Indeed, though it was not possible to make further experiments, there appears no reason to suppose that any of the slime-producing organisms found had an injurious effect.

Needless to say, the work entailed in preparing the cultures for the experimental cheeses enumerated above was considerable. In addition to this, regular bacteriological observations have been made throughout the seven months of the cheese-making season. And, as each month's cheese has been

There has been a bacteriological examination of some of the local cheeses. The results of the examination of the cheeses confirm those which have been obtained in former years. From this work on the cheeses, forty-eight plate cultures made at Cossington, from which eighty-six pure cultures obtained and studied.

They may be classified as follows:—

Cocci	{liquefying	16
	{non-liquefying	21
Bacilli	{liquefying	8
	{non-liquefying	31
Yeasts, &c.		10
Total		<u>86</u>

Season and Locality.—As in former years, so in 1896, nearly all liquefying organisms were found during the early part of the season, that is during April and May, in which months 12 of the twenty-four liquefying organisms were obtained. The persistence of this peculiarity year after year seems to confirm the fact that the variation is due to some unexplained irregularity of the season.

On the other hand, the organisms which were most abundant in 1895—the varieties of *Coli communis*—though present, more especially towards the latter part of the season, *i.e.* from August onwards, were on the whole not nearly so frequently found in 1896. Other organisms which were not found at all in 1895 were far more prominent. But many of these were very different, if not identical with, organisms found at Mark in 1894.

The farm at Mark is only five miles, as the crow flies, from the farm at Cossington. The cows at Mark, or some portion of them, feed in the low-lying marsh or moor land which lies away continuously till it merges in the moor land or moor on which many of the cows supplying the milk at Cossington were kept. The thought naturally arises, can there be a common cause which accounts for the bacteria found in 1896 and 1895 being so similar?

Are certain bacteria found in certain districts and not in others?

Is it locality or is it season which causes these fluctuations in the varieties of bacteria present each year during the cheese-making season?

Until this question is settled, we cannot hope to make further progress. It is a large question, and one most difficult to solve. It brings us once more face to face with a common belief among cheese-makers that to make good cheese on some soils and in some districts is not possible, or at least can only be attained with considerable difficulty.

Spans.—Many causes exist by which milk, before ever it enters the dairy, may become more or less contaminated with bacteria injurious to cheese-making. Some of these causes have yet to be discovered, and others, though known, are difficult to get rid of. But while these problems have to be solved by future investigation, the cheese-maker should meanwhile utilise the information already obtained. It has been shown that there is no source of trouble in the cheese-dairy equal to that due to the introduction of cows' droppings into the milk. The use of "spans" is an absolutely certain method of so contaminating milk, especially as there seems to be a strong dislike on the part of the milkers to having them cleaned. Why so many of the cheese-makers of Somerset persist in employing them, when over the greater part of England they are unknown, passes my comprehension. No amount of care can prevent their becoming soiled, and through them the hands of the milkers are also soiled, and thus the milk is contaminated. My advice is, get rid of spans! It may not be possible to do so at once, but by degrees it can be accomplished, and once done farmers will wonder why on earth they used them so long.

V.—CONCLUSION.

I have endeavoured to summarise in as simple language as possible the results of these observations and experiments, which year by year become more scientific. At the same time. I have endeavoured to indicate the nature of the work which yet remains to be carried out. Briefly, the four most important problems remaining are:—

(a.) What hidden chemical changes are taking place in the curd during the manufacture of a cheese?

(b.) What changes take place during the ripening of a cheese?

(c.) Will it be possible, by artificially introducing bacteria into milk, to improve the quality of cheese?

(d.) Whence come those taint-producing organisms which are the cause of such an enormous loss of money to the cheese-makers of this country?

The amount of work which was entailed by these investigations has been exceptional, and could not have been carried out had not my chief assistant, Mr. Alexander Cameron, willingly undertaken to spend the seven months at Cossington and conduct there, under special difficulties, the very delicate tests involved.

XV.—*Annual Report of the Society's Consulting Chemist*
(DR. J. A. VOELCKER, M.A., F.I.C., &c.).

During the year 1896 sixteen samples have been sent to me, for analysis, by Members of the Society. These were as follows:—

Waters	7
Milk	1
Linseed Cake	1
Cotton Cakes	3
Manures	3
Soil	1
Total	16

In addition, eight analyses (one of soil, two of grass, two of water, three of manures) have been made in connection with the Society's Grass Experiments.

Of the seven samples of water, two were badly contaminated with drainage products, containing, as the subjoined analyses show, very large amounts of chlorides and also of nitrates. One of these had, further, an excessive quantity of total solid matter.

	No. 1.	No. 2.
	Grains per gall.	Grains per gall.
Total solid Residue	51·52	91·64
Oxydisable Organic Matter	·53	·48
Nitric Acid as Nitrates	7·81	15·63
Chlorine	4·81	11·00
(Equal to Chloride of Sodium)	(7·82)	(17·88)
Free Ammonia	·0015	trace.
Albuminoid Ammonia	·003	„

In another instance two different samples of water were sent to me, the one taken direct from a well on a farm, and the other, supposed to be from the same source, but drawn from a tap within the farm-house, after the water had passed through pipes. The results of analysis were:—

	No. 1. From Well.	No. 2. From Tap Inside House.
	Grains per gall.	Grains per gall.
Total solid Residue	8·96	18·76
Oxydisable Organic Matter	·41	·26
Nitric Acid as Nitrates	·06	·06
Chlorine	·83	1·14
(Equal to Chloride of Sodium)	(1·37)	(1·88)
Free Ammonia	·001	none.
Albuminoid Ammonia	·001	trace.

It will be noticed that the two waters gave very different amounts of solid matter in solution, and, though the second one contained a certain amount of iron, derived probably from the pipes, the increase in dissolved solids was due principally to lime and magnesia salts, and it seems doubtful whether the source could have been the same in the two cases.

The one sample of milk examined was good, giving 3·90 per cent. of butter-fat, with 12·82 per cent. of "total solids."

Of the three cotton-cakes, one was good, a second not nice or fresh, while the third was mouldy throughout, and not in a proper condition for feeding.

The one linseed cake sent was fairly pure.

The three samples of manures analysed comprised one of Belgian phosphate, and two called "Dissolved Bone Manure." The Belgian phosphate was called "Belgian Superphosphate," and was said to contain "35 to 36 per cent. soluble." As I pointed out to the sender, however, after analysis, it was really *raw* phosphate, and not "superphosphate" (or dissolved phosphate), and the material, though useful enough to a chemical manure manufacturer (it contained 44·17 per cent. of phosphate of lime), is not one for a farmer to use.

The so-called "Dissolved Bone Manures" gave the following analyses:—

	A.	B.
Moisture	10·27	4·71
*Organic Matter, water of combination, &c.	17·89	21·13
Monobasic Phosphate of Lime	2·81	2·32
(Equal to "Soluble Phosphate")	(4·41)	(3·64)
Insoluble Phosphates	16·72	29·93
Sulphate of Lime, &c.	24·25	28·06
Sand	28·06	13·85
	160·00	100·00
*Containing Nitrogen	1·39	1·89
(Equal to Ammonia)	(1·69)	(2·29)

I was subsequently informed that the B sample contained Belgian phosphate used as a "dryer." The effect has been to reduce the amount of "soluble phosphate," that may have been present, to very small proportions, and it is hardly right to call a manure with so little soluble matter "*dissolved bone manure*" at all. Probably sample A was similarly made.

The one sample of soil sent was a heavy impervious clay from the Lower Lias. It was not actually deficient in any of

ingredients of fertility, but the soil, owing to its nature, required much working in order to bring these into use and make them available.

VI.—*The Society's Exhibition at St. Albans.* By THOS. F. PLOWMAN, Secretary and Editor.

In 1896 the Society, for the first time in its history, held its annual Exhibition at St. Albans.

A plan showing the situation and arrangement of the Show ground will be found facing the titlepage of this volume.

The Exhibition was opened on Wednesday, May 27, and closed on Monday, June 1.

On Thursday the Exhibition was honoured by a state visit from the Lord Mayor of London (Alderman Sir W. H. Wilkin) and the Lady Mayoress, and Sheriff Alderman J. Pound and Mrs. Pound. His Lordship was accompanied by a Sword-Bearer, Mace-Bearer, and City Marshal, with their signia of office. The equipages, including the historic gilt coach and its six gaily-caparisoned black horses, made a gallant show in their progress through the Yard, whilst the antique picturesqueness of some of the official costumes imparted additional interest to the procession.

On Friday the Society was especially honoured by a visit from its Patron, H.R.H. the Prince of Wales, K.G., the Princess of Wales, the Princesses Victoria and Maud of Wales, and Prince Charles of Denmark. Their Royal Highnesses, who were staying at Hatfield, were accompanied by the Premier and the Marchioness of Salisbury, the Secretary of State for War (the Marquess of Lansdowne, K.G.), the President of the Board of Agriculture (The Right Hon. W. H. Long, M.P.), the President of the Local Government Board (The Right Hon. H. Campbell, M.P.), and other distinguished personages.

ANNUAL MEETING OF MEMBERS.

At the Annual General Meeting of Members, held on the third day of the Show, in the Council Pavilion, the following Report to the Council was received and adopted:—

The Council in presenting their Annual Report congratulate the members upon meeting for the first time in the County of Herts and a city so rich in historic associations as St. Albans. The very liberal spirit in which the invitation to hold the Show was conveyed is a great inducement to the Council to break fresh ground by accepting it, and the expectations that were then formed have been

fulfilled in the hearty welcome the Society has received and the unusually large extent of the Exhibition.

The Society has further cause for congratulation in the honour conferred upon it by the visits to its Show Yard of Their Royal Highnesses the Prince and Princess of Wales, and the Lord Mayor and Lady Mayoress of London. The presence of the Royal Patron of the Society and of the representative head of the greatest municipality in the world are noteworthy events in the Society's history.

The Council are glad to be able to report that there has been a satisfactory accession of new Members during the year, the total number standing in the Society's books on January 1st last being 1,278 as against 1,203 on the corresponding date of the previous year, whilst many new Members have been elected during the current year.

The Council regret that the Society has recently lost by death three of its Vice-Presidents, viz.:—the Marquis of Bath (who was President in 1863), Col. Troyte (who was for some years a Steward of the Society), and Mr. H. Barnett; also three Members of Council, viz.:—Mr. V. P. Calmady, Col. Trood, and Mr. A. Grenfell.

The Council have continued their efforts for the promotion of Technical Education by organising and conducting Schools on behalf of County Councils. Under arrangements with these bodies, the Society is conducting a Butter School for Devon, a Cheese and a Farriery School for Somerset, and a Cheese School for Dorset. The Council are glad to be able to state that those for whom the instruction is primarily intended have not failed to take advantage of it, the attendance of Students at each School being very satisfactory.

The Council are continuing the practical and scientific investigations, initiated a few years since, in connection with Cheese-making and Cider-making, the experience of previous years having fully satisfied them of the value of these researches. Particulars of the results obtained have been published in the recent issue of the Society's Annual 'Journal.'

The desirability of experimenting on the improvement of grass land having frequently been urged upon the Council, they have set on foot a series of experiments in this direction.

The Board of Agriculture has once more borne testimony to the utility of the experimental and research work of the Society by awarding a grant of 350*l.* in aid of it.

As the Pomological Society of France held its Annual Exhibition and Conference for 1895 at St. Brieuc, which is situated in a large cider-making district of Brittany, the Council thought it desirable to be represented on the occasion, with a view of ascertaining in what respects the methods adopted abroad with regard to the cultivation of cidr-fruit and the manufacture of cider differ from those pursued in our own country. A deputation was accordingly appointed to attend on behalf of the Society, and the results of their inquiries are recorded in the last issue of the Society's Annual 'Journal.' The experiences gained from the visit have induced the Council to make some material alterations in the terms of the Society's prizes in the Cider classes, and of the conditions under which they are offered.

This has rendered the Exhibition more practical and instructive in character, and has led to a large increase of entries. The Society's representatives met with much kindness and courtesy from the members of the French Society, who facilitated in every way the objects of their visit.

The present Exhibition affords satisfactory evidence of the Society's growth, inasmuch as this is the largest show of Stock that the Society has ever held, although, for the first time, a limitation was imposed with regard to the number of entries an exhibitor could make in any one class. The Council regret that owing to the unfortunate prevalence of swine fever, it was found inadvisable to include pigs in the Exhibition. For the first time Goats find a place in the Society's Show Yard, arrangements for this having been made with the British Goat Society. The British Beekeepers' Association have also joined with the Society in providing an exhibition of bees, honey, hives, &c.

A new and very interesting feature of the present Exhibition is a collection of insects prejudicial to animals and crops, with specimens of their ravages, and a series of coloured drawings in further illustration of the subject. The entomological exhibits have been specially prepared and kindly lent to the Society by Miss Eleanor A. Ormerod, F.E.S., and the drawings by Miss Georgiana E. Ormerod, F.E.S., to whom the Society is much indebted for the time, trouble, and ability they have devoted to the work.

The Council have gratefully to acknowledge the receipt of Special Prizes, amounting to 152*l.*, from the St. Albans Local Committee, and others of varying amounts from the Shire Horse Society, the Hunters' Improvement Society, the English Jersey Cattle Society, the English Guernsey Cattle Society, the Kerry and Dexter Cattle Society, the Shorthorn Dairy Prize Fund Committee, the Shropshire Sheep Breeders' Association, the Suffolk Sheep Society, and from Sir Walter Gilbey, Bart.

The Council have accepted invitations to hold the Annual Meeting in 1897 at Southampton; and in 1898 at Cardiff.

* They have much pleasure in recommending that Lord Montagu of Beaulieu be elected President for the ensuing year; that the Earl of Clarendon and Sir W. H. Walrond, Bart, M.P., be elected Vice-Presidents of the Society; and that the gentlemen named on the Agenda Paper be elected Members of Council for the years 1896-8 in room of those retiring by rotation.

The Council desire to express their thanks to the Mayor of St. Albans, the Members of the Local Committee, and the inhabitants of the town and neighbourhood generally, for the cordiality with which they have welcomed the Society, and the energy they have displayed in promoting the success of the Meeting.

Resolutions were passed adopting the recommendations contained in the Report with reference to the appointment of officers; and special votes of thanks were accorded to the Mayor and Local Committee of St. Albans, the Judges, the Railway Companies, and the retiring President.

ENTRIES.

The following is a comparative statement of the entries in the various classes. Owing to the prevalence of swine fever, entries of Pigs could not be received in either 1894, 1895, or 1896:—

	Guildford, 1894.	Taunton, 1895.	St. Albans, 1896.
HORSES:—			
Agricultural	55	72	107
Hunters, Hacks, Ponies, and Harness ..	55	64	113
	— 110	— 136	— 220
CATTLE:—			
Devon	33	48	42
Shorthorn	50	68	77
Hereford	40	38	48
Sussex	58	34	44
Jersey	172	163	168
Guernsey	68	71	109
Aberdeen Angus	11	4	22
Kerry and Dexter	16	41	27
Butter Test	20	23	37
	— 470	— 490	— 574
SHEEP	238	212	236
GOATS .. .. .	..	..	42
POULTRY	430	406	443
DAIRY PRODUCE:—			
Cheese	97	164	114
Butter	99	206	167
Cream	10	11	13
	— 206	— 381	— 294
CREAM-SEPARATORS	7	3	6
MISCELLANEOUS FARM PRODUCE	17	39	51
COMPETITIONS:—			
Butter-Making	190	283	137
Horse-Shoeing	57	113	38
Sheep-Shearing	7	38	22
Milking .. .. .	..	17	24
	— 254	— 451	— 221
	1,732	2,118	2,077

A list of the Awards, names of the Judges, &c., will be found on pages i.-lxv. of the Appendix to this volume.

CIDER.

A separate Report dealing with this section of the Exhibition will be found on pages 124-140.

PRIZES.

The following table shows how the money prizes were apportioned at the 1896 Exhibition, and also, for purposes of comparison, at the 1894 and 1895 Exhibitions:—

	Guildford, 1891.			Taunton, 1895.			St. Albans, 1896.		
	£	s.	d.	£	s.	d.	£	s.	d.
Horses	536	0	0	567	0	0	644	0	0
Cattle	1,221	10	0	1,290	10	0	1,260	10	0
Sheep	525	0	0	492	0	0	465	0	0
Goats .. .. .	..	..	..	..	..	..	34	0	0
Poultry	190	10	0	188	0	0	188	0	0
Dairying	279	0	0	384	10	0	324	10	0
Horse-Shoeing	22	0	0	24	2	0	22	0	0
Sheep-Shearing	10	0	0	20	0	0	20	0	0
Miscellaneous	46	0	0	36	0	0	23	17	0
Totals	2,830	0	0	3,002	2	0	2,981	17	0

The Money Prizes were contributed as follows :—

	£	s.	d.
Bath and West and Southern Counties Society ..	2,692	10	0
St. Albans Local Committee	152	0	0
English Jersey Cattle Society	40	0	0
British Goat Society	24	0	0
British Beekeepers' Association	23	17	0
English Guernsey Cattle Society	19	0	0
Kerry and Dexter Cattle Society	10	10	0
Shropshire Sheep Breeders' Association	10	0	0
Shorthorn Dairy Prize Fund Committee	10	0	0
	2,981	17	0

Gold, Silver, and Bronze Medals were also given by the Society, and Medals or Plate by the Shire Horse Society, Sir Walter Gilbey, Bart., the Hunters' Improvement Society, English Jersey Cattle Society, English Guernsey Cattle Society, Suffolk Sheep Society, and the British Goat Society.

IMPLEMENTS.

The following is a comparative statement of the space occupied by Implements, Machinery, &c.

		Guildford, 1894.	Taunton, 1895.	St. Albans, 1896.
Machinery in Motion	feet run	1,106	1,190	1,190
Agricultural Implements	}	4,595	4,550	4,155
Shedding				
Seeds, Cattle Foods, &c., Shedding	}	880	877	694
Carriages, &c., Shedding				
Open Space	sq. feet	10,681	18,150	16,238
		18,102	25,477	22,872

MISCELLANEOUS DEPARTMENTS.

In addition to the features mentioned in the foregoing Report of the Council, a fully equipped Working Dairy formed as usual a prominent feature of the Show Yard. The Butter-making Competitions were held in it, and butter-making demonstrations were given daily by Professor Carroll, of Glasnevin, assisted by the Society's Dairy School Teachers.

The Exhibitions of Pictures, Art Manufactures, and Plants and Flowers were fully up to the average of previous years, and there was no diminution of interest in them on the part of the public. The customary Art Union was held, and a list of the prize winners and of the pictures chosen will be found on pages lxvi., lxvii. of the Appendix to this volume. At the request of the Herts County Council, the Society allotted space in the Art-Manufactures Gallery for an exhibition of work executed by students in the Technical Classes of the County. The exhibits, for which prizes were offered, consisted of drawings, carvings, art-needlework, specimens of book-binding, straw plaiting, &c., and attracted considerable public attention.

Lectures on bee-keeping, combined with practical instruction, were given each day under the auspices of the British Beekeepers' Association. There was also an exhibition of honey, hives, and apiarian appliances, prizes for these being offered in thirteen Classes.

Musical performances were given by the Bands of Her Majesty's Scots Guards and the Portsmouth Division of the Royal Marine Light Infantry.

The usual Sunday service, at which there was a large attendance of herdsmen and others engaged in the Yard, was held in the Working Dairy. It was conducted by the Rev. R. A. Squires, Vicar of St. Peter's, St. Albans, and the sermon was preached by the Venerable W. J. Lawrance, M.A., Archdeacon of St. Albans.

ATTENDANCE.

The total number of persons paying for admission was 34,436, as against 43,292 at Taunton in the previous year.

A comparative statement of attendances since 1852 will be found on pages cvii., cviii. of the Appendix to this volume.

The Note-Book.

1.—*On various Systems of Butter-Making.**

THE system of making butter generally adopted in Devon is known as the "Tub and Hand Process," and is thus concisely described by the Chairman of the Devon Technical Education Committee, Mr. C. T. D. Acland:—

"The milk is allowed to stand in shallow pans for about twenty-four hours; the pans are then heated, either in a special heating apparatus (scalder), or otherwise, until a thick layer of clotted cream is formed on the top; the stage at which the process is complete is usually judged by the eye. The pans are then replaced in the dairy to cool and allowed to remain some twenty-four hours, after which the clotted cream is skimmed off, placed in a tub, and stirred and turned about by the worker's hand until converted into butter."

This system of making butter is not only in vogue in Devon, but is by some persons maintained to be "the best method of converting cream into butter." Indeed, at a recent Show in Plymouth the Judges of the butter-making competitions went so far as to report that

"the results obtained in the various contests had, in their opinion, indisputably established the superiority of the old-fashioned Devonshire method of tub and hand over any other style adopted as regarded (1) the time occupied; (2) the weight of butter made; and (3) the quality of the same."

In view of these statements, and having regard to the enormous importance of the Dairy Industry in Devon, the County Council appointed a Committee to conduct an investigation into the

* An epitome of, and extracts from, a Report presented to the Devon Technical Education Committee, and published by W. Pollard & Co., Exeter.

relative merits of the various systems of butter-making, and Mr. F. J. Lloyd and Dr. Bernard Dyer were appointed to carry out the analytical work involved.

HOW THE EXPERIMENTS WERE CONDUCTED.

The experiments began on Monday, November 23rd, and lasted for a week.

On each of the first three days the milk was thoroughly mixed in a cheese tub and divided into six portions of 200 lbs. each.

These six portions were treated each day as follows.

Three portions were set, each in twelve pans, for scalding in the ordinary Devonshire fashion. Two dairymaids (Miss Savery and Miss Wills) scalded one portion each, the third portion being scalded half by each of them. The scalding took place after the pans had stood twenty-four hours. In the case of Monday's milk, both Miss Wills and Miss Savery scalded to a temperature of 170° Fahr.; in the case of Tuesday's milk, Miss Wills scalded to from 180° to 185° Fahr.; and Miss Savery to from 170° to 180° Fahr.; in the case of Wednesday's milk, Miss Savery scalded to from 175° to 180° Fahr., and Miss Wills to 180° Fahr. The scalded pans were set aside, the three days' sets being skimmed and made into butter on the last three days of the week, so that each had two days after scalding in which to ripen. Out of each day's three sets of pans the cream of two sets was made into butter by Miss Savery and Miss Wills respectively, by the tub and hand method; and the cream of the third set was churned by Miss Smart.

The fourth portion of milk on each of the three days was set up in large old-fashioned shallow "leads." These were skimmed on the mornings of the two succeeding days. The cream of Monday's milk was churned on Thursday, that of Tuesday's milk was churned on Friday, and that of Wednesday's milk was churned on Saturday.

The fifth portion of milk on each of the three days was separated by a Laval Farmer's Alpha hand separator. Monday's milk (owing to the non-arrival of the separator on Monday) was separated on Tuesday. Tuesday's and Wednesday's milk was separated at once. The separated cream of Monday's milk was churned on Wednesday,* that of Tuesday's milk on Friday, and that of Wednesday's milk on Saturday.

* Owing to the milk standing a day before it was separated, this cream was found to be ripe enough for churning a day earlier than it would have been had it been separated at once.

The sixth portion of milk was also separated by the separator, and the cream scalded at once in ordinary scald pans to a temperature of 150° Fahr. The creams of the three days' milk were churned respectively on Wednesday, Friday, and Saturday.

Thus there were for comparison :—

Devonshire scald, "tub and hand"	6 experiments.
Devonshire scald, churned	3 "
Shallow pan cream, raw, churned	3 "
Separated cream, raw, churned	3 "
Separated cream, churned, after scalding	3 "

The milk was all morning's milk of good quality, containing on an average nearly 3·65 per cent. of fat.

The butter was carefully weighed and subsequently analysed to ascertain the percentage of fat, water, curd, and salt contained in it, and also to calculate the proportion of fat recovered as butter and that lost in skim-milk, butter-milk, &c.

For check purposes the skim-milk, and also the butter-milk, were weighed and analysed to find the quantity of fat respectively contained in them. In fourteen out of the eighteen experiments the quantity of butter-fat found by analysis in the skim-milk and butter-milk almost exactly accounts for the butter-fat not recovered in the butter (*see* Table A). In three or four of the scald milks the fat did not appear to balance so well. This was explained by the fact that after the scald pans are skimmed, a rim of clotted cream adheres so tenaciously, that it is difficult to remove, and when removed it is by no means easy to re-mix with the skim-milk so as to obtain an exactly accurate sample for analysis.

Although the butter-milk was analysed, the water in which the butter was subsequently washed was not analysed, and probably in some cases it carried away an appreciable quantity of fat. These considerations account for the apparent loss.

At the conclusion of the week's trials, samples of all the eighteen butters made were marked with arbitrary numbers and sent for report to four judges selected by the Committee.

THE ANALYTICAL RESULTS OBTAINED.

The table on pages 210, 211 shows the weight and percentages of fat in the original milk, in the butter, and in the by-products (skim-milk, &c.), and the weight of fat recovered in the butter or lost in the by-products.

TABLE

MONDAY'S

	DEVON SCALD. Tub and Hand.			DEVON SCALD. Tub and Hand.		
	Weight.	Per-centage of Fat.	Actual Weight of Fat.	Weight.	Per-centage of Fat.	Actual Weight of Fat.
	lbs.		lbs.	lbs.		lbs.
Milk	200	3.57	7.14	200	3.57	7.14
Butter	7.65	78.70	6.02	7.81	81.00	5.92
Skim Milk	181.60	.54	.98	181.00	.55	.99
Butter Milk	4.10	2.85	.09	7.20	1.80	.13
Incidental Loss of Fat in Pans, &c. ..	..	..	.05	..	..	.10

TUESDAY'S

	DEVON SCALD. Tub and Hand.			DEVON SCALD. Tub and Hand.		
	Weight.	Per-centage of Fat.	Actual Weight of Fat.	Weight.	Per-centage of Fat.	Actual Weight of Fat.
	lbs.		lbs.	lbs.		lbs.
Milk	200	3.70	7.40	200	3.70	7.40
Butter	7.95	79.30	6.30	7.94	80.30	6.38
Skim Milk	181.40	.43	.78	181.50	.41	.74
Butter Milk	3.90	8.01	.12	6.60	2.15	.14
Incidental Loss of Fat in Pans, &c. ..	..	..	.20	..	..	.14

WEDNESDAY'S

	DEVON SCALD. Tub and Hand.			DEVON SCALD. Tub and Hand.		
	Weight.	Per-centage of Fat.	Actual Weight of Fat.	Weight.	Per-centage of Fat.	Actual Weight of Fat.
	lbs.		lbs.	lbs.		lbs.
Milk	200	3.67	7.34	200	3.67	7.34
Butter	7.80	80.10	6.25	7.84	79.80	5.82
Skim Milk	183.00	.47	.86	181.20	.50	.91
Butter Milk	6.40	3.17	.20	5.00	6.60	.33
Incidental Loss of Fat in Pans, &c. ..	..	..	.08	..	..	.28

ON SCALD. Turned.		SHALLOW PAN.			SEPARATOR. Cream Churned. Raw.			SEPARATOR. Cream Scalded Before Churning.		
Per- centage of Fat.	Actual Weight of Fat.	Weight.	Per- centage of Fat.	Actual Weight of Fat.	Weight.	Per- centage of Fat.	Actual Weight of Fat.	Weight.	Per- centage of Fat.	Actual Weight of Fat.
	lbs.	lbs.		lbs.	lbs.		lbs.	lbs.		lbs.
3·57	7·14	200	3·57	7·14	200	3·57	7·14	200	3·57	7·14
35·60	5·83	5·75	85·00	4·88	7·80	86·90	6·77	7·54	86·10	6·49
·62	1·12	178·70	1·20	2·14	153·00	·12	·18	154·00	·15	·23
·70	·12	24·20	·33	·08	47·00	·41	·19	43·00	·85	·36
..	·07	..	..	·04	..	..	·00	..	..	·06

ON SCALD. Turned.		SHALLOW PAN.			SEPARATOR. Cream Churned. Raw.			SEPARATOR. Cream Scalded Before Churning.		
Per- centage of Fat.	Actual Weight of Fat.	Weight.	Per- centage of Fat.	Actual Weight of Fat.	Weight.	Per- centage of Fat.	Actual Weight of Fat.	Weight.	Per- centage of Fat.	Actual Weight of Fat.
	lbs.	lbs.		lbs.	lbs.		lbs.	lbs.		lbs.
3·70	7·40	200	3·70	7·40	200	3·70	7·40	200	3·70	7·40
83·90	6·13	6·75	85·20	5·75	7·89	86·30	6·81	7·94	87·70	6·96
·40	·72	176·30	·84	1·48	166·00	·11	·18	169·10	·10	·17
1·18	·27	17·40	·71	·12	38·00	·65	·25	36·50	·51	·19
..	·28	..	..	·05	..	..	·16	..	..	·08

ON SCALD. Turned.		SHALLOW PAN.			SEPARATOR. Cream Churned. Raw.			SEPARATOR. Cream Scalded Before Churning.		
Per- centage of Fat.	Actual Weight of Fat.	Weight.	Per- centage of Fat.	Actual Weight of Fat.	Weight.	Per- centage of Fat.	Actual Weight of Fat.	Weight.	Per- centage of Fat.	Actual Weight of Fat.
	lbs.	lbs.		lbs.	lbs.		lbs.	lbs.		lbs.
3·67	7·34	200	3·67	7·34	200	3·67	7·34	200	3·67	7·34
82·90	5·54	6·83	84·20	5·75	8·31	82·70	6·87	8·09	85·30	6·90
·40	·71	178·50	·78	1·39	160·00	·11	·17	153·00	·10	·15
2·30	·63	17·60	·87	·15	42·50	·67	·28	40·00	·70	·28
..	·46	..	..	·05	..	..	·02	..	..	·01

The following table (B) gives the average results for the three days obtained by each system, and the average composition of the butters.

TABLE B.

AVERAGES.

—	6 Scald Tub and Hand.	3 Scald Churned.	3 Shallow Pan.	3 Separator Raw.	3 Separator Scalded.
	lbs.	lbs.	lbs.	lbs.	lbs.
Weight of Butter made ..	7·66	6·93	6·44	8·00	7·86
Weight of Fat in Milk ..	7·29	7·29	7·29	7·29	7·29
Actual Fat recovered in the Butter }	6·11	5·83	5·46	6·82	6·78
Fat in Skim Milk	·88	·85	1·67	·17	·18
Fat in Butter Milk	·17	·34	·11	·24	·28
Loss in apparatus unac- counted for }	·13	·27	·05	·06	·05

AVERAGE PERCENTAGE COMPOSITION OF BUTTER.

Fat	79·8	84·1	84·8	85·3	86·4
Water	16·7	13·8	12·5	12·6	11·9
Curd	1·1	·5	·5	·6	·5
Salt and Ash	2·4	1·6	2·2	1·5	1·2
	100·0	100·0	100·0	100·0	100·0

THE CONCLUSIONS AT WHICH THE CHEMISTS ARRIVE.

Devonshire Scald Cream Butter.

The first comparison we would draw is between the tub and hand and churn methods of dealing with Devonshire scald cream.

By the "tub and hand" system, the average quantity of butter made from 200 lbs. (rather less than twenty gallons) of good milk was 7·66 lbs. (7 lbs. 10½ ozs.); while, by churning the scald cream, the average quantity made was 6·93 lbs. (6 lbs. 15 ozs.). The actual weight of butter made by the tub and hand method was therefore greater by 11½ ozs. than that made by the churn.

This gain of weight does not imply a correspondingly large gain in real butter-fat. The extra butter-fat recovered in the tub and hand method averaged 28 lbs. (4½ ozs.). The greater part of the apparent gain was in water, curd, and salt.

It is generally considered by public analysts, and by the Government analysts at Somerset House, that any quantity of water in butter over and above 16 per cent. is excessive. Only

ne of these six tub and hand butters contained less than 16 per cent. of water, while one contained over 17 per cent., and another nearly 18½ per cent. of water. The quantity of curd present was in no case less than 1 per cent., being, on the average, more than twice as much as that contained in any of the butters made by the churn. The proportion of actual fat in the tub and hand butters averaged less than 80 per cent.

We cannot, therefore, regard the larger weight of butter, although an advantage to the vendor so long as the moisture went unchallenged, as being altogether in the light of a gain.

The butter made from Devonshire scald cream by the churn contained on the average only 13·8 per cent. of water, and in no case exceeded 14·3 per cent.; and as the curd and salt were both less, it contained on an average 84·1 per cent. of butter-fat, and was therefore, pound for pound, of much better value to a purchaser.

To test the actual time taken by the two processes, the time was noted at which each lot of scald cream was handed to each dairymaid, and also the time at which the butter was placed on the board ready for weighing.

The times, in the tub and hand trials, were, on the first day, 48 and 45 minutes, as against 45 minutes by the churn; on the second day, 51 and 47 minutes, as against 38 minutes; and on the third day, 34 and 38 minutes, as against 27 minutes by the churn. On the average, the two tub and hand workers took 45 minutes, as against 37 minutes by the churn. The difference thus averaged 8 minutes less by the churn for the making up of the cream of 20 gallons of milk.

Shallow Pan System.

The butter made by this plan weighed, on the average, only 6·44 lbs. (6 lbs. 7 ozs.). There was a much larger loss of butter-fat in the skim-milk than in the scald process, and the butter was less in quantity as well as inferior in keeping quality.

Separator System.

The butter made from the raw cream obtained by the separator averaged 8 lbs., and from the cream which was scalded 7·86 lbs. (7 lbs. 13¾ ozs.). The fat averaged in these two sets of butters 85·30 per cent. and 86·40 per cent., so that the butters were greater in quantity and richer in fat than any of the others.

This was due to the fact that, by the use of the separator, the fat left in the skim-milk only averaged 0·11 per cent.,

as against 0·48 (or more) in the scald system, and 0·94 in the shallow pan system.

There was obtained on the average from the scalded separated cream nearly 8 lbs. of butter, as against nearly 7 lbs. from the churned Devon scald cream. This represents nearly seven pounds a week on a dairy dealing with 20 gallons of milk daily.

The difference between the relative local values of scald milk and separated milk may to some extent help as a set-off against this loss, for scald milk is not only richer in fat than separated milk, but is said to be a popular article of consumption in Devonshire.

Scalding, whether applied to the milk in Devonshire fashion for the raising of the cream or to cream obtained by the mechanical separator, exercises a strong preservative action, first of all by killing the micro-organisms which otherwise would produce subsequent fermentation, and more especially by rendering insoluble the albuminoid constituents of the milk.

Flavour and Keeping Qualities.

To test these, samples of the butter were sent to four butter merchants, with a request that they should report upon them as soon as received, and again one week and a fortnight later. One of the judges failed to carry out his promise to judge the butter, and the other three strangely disagree in several instances. But Mr. Lloyd and Mr. Dyer are at one as regards their opinions of the butter, and from their Report we gather that the Devon scald cream butters were all originally of good flavour, but when compared with the average of the hand-made butters, two out of the three which were churned have kept better than the hand-made butters. The scald cream butter, churned from the first day's milk, has not kept so well as the other two churned samples, owing to the fact that it was undersalted. Consequently it has not kept so well as the best of the hand-made butters.

Some of the tub and hand butters have stood the time test remarkably well, remaining sweet and affording a striking contrast to some of the raw cream butters.

The present time of year is very favourable for keeping butter. In the summer the more complete removal of the butter-milk by the churn would probably give the churned butter a better chance of keeping than tub and hand butter.

Butter from scald cream is still scald cream butter, even when made by the churn; that is to say, it retains, in the main, the peculiar characteristics of scald cream butter. But it also retains

cool, delicate flavour of fresh, sweet butter better than when made, owing, no doubt, to the removal of much more of the curd and other constituents of butter-milk.

If this is the case in winter with butter made under the strictest supervision, by picked and skilled dairymaids, it seems reasonable to suppose that any advantage in quality gained by turning the scald cream instead of tubbing it, would be still greater in summer, especially in the case of workers of only average skill and intelligence.

The butter made from the raw separated cream was very decidedly superior, especially in keeping quality, to the shallow tub butter, but inferior in keeping quality to any of the scald cream butters.

In every case, the butter made from separated cream which had been scalded retained its original good flavour and quality better than any of those made from raw cream, and better than the tub and hand butters. Whether its flavour is equal to that of the Devon scald churned butter is a matter of individual taste, as the flavour of each, though excellent, is different.

THE COMMITTEE'S REPORT.

After carefully considering the Reports of the Analysts and Judges, the Committee think they are justified in drawing the following conclusions :—

FIRST.—That as an instrument for extracting the utmost possible amount of butter-fat from the milk, the separator is unequalled, and may profitably be used in dealing with any quantity of milk exceeding the produce of, say, eight cows.

SECOND.—That the cream, when separated, should be scalded before being made into butter, in order to insure it keeping good and sweet for a longer time, by destroying any germs that may exist in the milk.

THIRD.—That for small dairies of, say, less than eight cows, the tub and hand or scald cream system will probably be found the most economical on the whole, owing to the greater value of the scald skim-milk as compared with separated milk, the initial expense of additional apparatus, and the smaller amount of articles to be kept clean. [The Committee suggest that there is no actual necessity for using the hand in stirring or making up, Scotch hands being in some respects preferable, and with practice, as easy to use, though it is said that their use occasions loss of weight.]

It is important to point out that the time occupied and fuel consumed in scalding* a large quantity of milk must be set against the much shorter time in which a similar quantity of milk can be dealt with by the separator.

FOURTH.—That in dealing with small quantities the tub and hand system gives better weight than the churn system. The analyses, however, show what the advocates of the latter system have consistently maintained, viz., that the increased weight of butter produced by the tub and hand system, as compared with the churn system, results chiefly from the presence in the tub and hand butter of water, casein, and salt. The Reports of the Judges, on the other hand, show that this does not interfere with the flavour or keeping qualities of the butter, and that the extra amount of water present is so incorporated that the butter does not appear to the eye to be wet. With reference to the remark made by the Experts on the subject of the standard adopted at Somerset House, the Committee think it only fair to the butter-makers of the Western Counties to draw attention to the fact that, in the opinion of competent judges, the commercial value of the butter is not deteriorated by the presence of what is considered to be an excessive proportion of curd and water.

The Committee think it important to draw attention to the fact that the Experts present a Joint Report, and though they do not state the fact, it is worth mentioning that where it was possible to arrive at a conclusion by two different methods concurrently, they adopted that plan, and they have been able to agree on the results. These results may therefore be accepted as scientifically reliable, and the Committee venture to think that the Report, as a whole, will be of considerable practical value to persons interested in butter-making, not only in the West of England, but in other districts.

2.—*Economic Horse Feeding.*

ECONOMIC horse feeding may be briefly defined as the art of obtaining the maximum of efficient work at the minimum of cost. This, of course, is the commercial aspect of the question—the aspect with which we are chiefly concerned,—for we may leave out of account those cases where animals are fed beyond the limits of nutrition, regardless of cost, for the sake of appear-

* And skimming.—Ed.

ance only. As a nation of horse breeders and large users of horse power, it is astonishing how very little attention has been paid to the economic feeding of this animal, for, with the exception of the larger horse-owning corporations, very little attempt is made to manage horses on strictly commercial lines.

Even in those cases where there is a demand for a fixed ration suitable for a certain class of animal—say a draught horse—the application of economic principles commonly falls short of the ideal, for the ration is given week in week out, Sundays, holidays, and working days alike, and it is expected that the animal will continue in health, always be ready for work, and at the same time look well.

Amongst all the panaceas for the woes of the farmer there is none that has so much to recommend it as decrease in the cost of production. In a great many instances, economy might begin in the team stable; indeed, it might be carried into the stables of thousands of users of horse labour who are not farmers, with advantage to both owners and horses.

But it must not be assumed, as is too often the case, that economy and parsimony are synonymous, or that the feeding of the team on unsaleable rubbish is economical. There is far too much of this now, and it is not economic feeding because it does not fulfil the condition of enabling the maximum of efficient work to be obtained. A food is not necessarily economical because it is cheap, for if it is of an unsuitable character or of bad quality it injuriously affects the health, which in its turn is destructive to working capacity. As an instance of how money may be saved by judicious management, we have the record accomplished by Mr. John Malcolm, the veterinary superintendent of the Birmingham Corporation horses. In 1881, the average number of animals kept was 224; the average weight of each was 1,528 lbs.; and the cost of maintenance per horse per week was a trifle over 14s. 1*d.* In 1887, there were 272, averaging 1,628 lbs. each, and costing less than 11s. 7*d.* each per week to keep. Something, doubtless, must be allowed for the gradual cheapening of feeding-stuffs; but bigger horses were being fed for half-a-crown a week less money, and, what is more, there was more efficient work and greater immunity from disease.

Anything like this saving in a farm stable means a considerable cheapening in the cost of production, for half-a-crown a week on a four-horse team is equivalent to an increment of 2*6*l. a year. In the majority of cases the matter does not end with a saving of the cost of food given beyond the actual requirements of the animal, for we get greater working capacity, less sickness, a lower death-rate, and a reduced expenditure for

nursing, medicines, or veterinary attendance. Some time ago a prominent veterinary surgeon expressed the opinion that half the mortality among equines occurred from some gastro-enteric trouble, and said that so far as his experience went these troubles were rather on the increase than otherwise. Probably the estimate is excessive, but it tends to show the extreme prevalence of digestive troubles; and these are, of course, very much a matter of feeding.

Too large quantities of food, feeding at irregular intervals, and on food of improper character or bad quality, are mostly to blame; in fact, there is no disputing that the greater amount of gastro-enteric troubles are the direct consequence of dietetic errors and bad management. In most cases the feeding of the team is left almost entirely to the carter, and, although he may be a well-meaning and industrious man, he is not likely to know much about the physiology of the animal with which he is dealing, or of the functions of digestion and nutrition. Generally he is bitten with the mania of his class—an overwhelming desire to have his charges fat—and it is with him an article of faith that when a horse is not working he ought to be eating. The owner rarely interferes while the horses are looking well, and does not know within a few shillings what they are costing to keep. Rarely is any attempt made to suit the ration to the work or to the individual requirements of each animal. Nor is this defect confined to farm stables.

In economical horse feeding both the horse and his work have to be considered, and allowance should be made for the kind, quantity and quality of the food used. No fixed diet can be made for all horses, either in the quantity used or in its albuminoid ratio. The requirements of the horse vary with his class, and his food should be directly proportionate to his work. As one horse will do more work than another, and work means waste of tissue, so the quantity sufficient for one will be insufficient for another. A horse doing moderate work does not require so much food as one doing very hard work, nor need it be so rich in nutritive qualities. Horses doing fast or slow work should not be fed alike, as the former require a more nitrogenous and a less bulky diet than the latter. Young growing horses, and those in low condition from previous hard work or stinting, require more food, and of different constituent elements, than horses that are fully matured and in fit condition. As the work varies with the season of the year, so ought the food to vary, and this applies especially to farm horses, whose work at different seasons fluctuates very materially.

It is essential to remember that no large bulk of innutritious foods will make up for a lack in quality, and no highly concen-

trated one, however rich, will compensate for a deficient quantity. There is generally very little fear but that bulk enough will be provided, since this is usually furnished by hay and straw, which, however, also provide a portion of the nutritive materials. Horses can be kept on good hay alone, but it is much too bulky, unduly distends the stomach, and incapacitates the animal from hard work, especially on the roads, or where activity is required. Large quantities of innutritious provender derange the digestive organs, and are especially unsuitable for a small-stomached animal like the horse. The grain ration of a horse should be designed to make muscle, not fat, especially when hard work is expected. When idle, the quantity of food should be reduced, even if the rest is only for a single day, but instead of this farm horses are commonly allowed more food on Sundays or other rest days, simply because they have more leisure to consume it. This is why colic and lymphangitis are more common on Mondays than on any other day in the week.

It is a mistake to stuff a horse with as much food as it will eat, under the idea that strength and endurance can be bottled up, or to regard the stomach as a kind of tender to the engine, from which reserves of fuel, or condensed energy, can be drawn when required.

As an average diet can be made for men of similar weight and occupations, so an average diet can be made for horses, but subject to certain limitations. For instance, the army authorities make the soldier a fixed daily allowance of food, and in the aggregate it suffices, but it is not sufficient for the average growing recruit, or the man of abnormal appetite or powers of assimilation, although more than enough for the mature soldier. The man, however, is at liberty to supplement the government allowance, and commonly does where he finds it inadequate; and we must remember this when providing an average ration for horses. If a dozen horses in one stable be doing similar work to a dozen of like weight and condition in another, an equal allowance of food may with all safety be apportioned to each stable, but the attendants will need to sometimes rob Peter to pay Paul. The difference in individual requirements and power of assimilation require to be noted. Experience goes to show that horses with large bones and loose-looking joints generally require more food in proportion to their weight than short, closely knit, compact-looking animals; but in regulating the food allowance to a stable a careful and intelligent man can note the necessity for an increase, or the utility of a decrease, in individual cases. The actual weight of food will, of course, vary a good deal with its nutritive constituents, but in the case of working animals there should never be an enormous disproportion between bulky hay,

straw, or roots, and the more concentrated grain. Heavy labour at slow work may receive more bulk and a lower albumen ratio than the same class of animals doing very heavy work, while bulk should be reduced in favour of grain in the case of animals working at a rapid pace.

A large number of cart horses managed by Mr. Reynolds, a well-known authority on animals of this class, received for regular work: maize, 10 lbs.; Egyptian beans or Canadian beans, 5 lbs.; oats, 2 lbs.; oatmeal and linseed, 1·3 lbs.; bran, 2 lbs.; hay, 10·6 lbs.; roots or grass, 3 lbs.—total 34 lbs. Dr. Fraser gives the ration of a company where horses are required to do very heavy loads as: hay (all chaffed), 16 lbs.; oats, 10 lbs.; beans, 5 lbs.; maize, 4 lbs.; bran 2 lbs.—total 37 lbs. In this grain is all crushed, and in Mr. Reynolds' stud the greater part of the hay is chaffed, only 2 or 3 lbs. being given in the morning. The large proportion of grain to hay should be not only well as the chaffing of hay and the inclusion of maize and roots in the diet.

In the typical agricultural ration hay preponderates, and in many cases the sole grain allowance consists in summer months of a bushel of oats per week. In many cases the oats are of inferior quality—"pilkings" or tail grain—the refuse of the cleaning machine—are supplied to the team, while the better grain is sold off, any deficiency being made up by the purchase of thin foreign oats. These oats are generally issued to the carter by measure, and in this way the horse is doubly defrauded. The whole of the space at our disposal might be taken up with a consideration of the difference in the feeding properties of good oats and bad, and the effect of thin poor grain on the health and working capacity of the animals receiving it. It is not too much to say that the feeding of agricultural horses is generally bad, and not calculated to secure the maximum of efficient work; therefore the feeding is not economical.

Let us examine the rations allowed by the Tramway Companies to a type of horse that does much of the lighter kind of work of the large towns:—

	London South.	London Street.	Liverpool.	Dublin.	Birmingham.	Glasgow.
Oats	7	3	—	3	10	—
Maize	7	12	12	14	6	—
Peas or Beans ..	1	1	4	—	4	—
Hay	11	11	14	12	12	—
Straw	3	—	—	—	—	—
Bran	—	1	1	0½	—	—
	29	28	31	29½	32	—

It will be seen that maize is largely used in every case. The oats exceed the maize in only one instance, and in one case, that of the Liverpool Company, oats are entirely dispensed with. In each case the grain allowance exceeds, in most instances largely, the hay ration. The total quantities are instructive as showing the daily weight of food necessary to maintain the animals in hard working condition.

Mr. Malcolm tells us that economic feeding may be achieved by the use of a ration "consisting of oats, maize, beans, barley, hay, &c., the mixture varying in its proportions from time to time, as the prices of the articles comprising it fluctuate in the market, provided always a due albuminoid ratio be maintained." Of all the food stuffs on which, from time to time, the horse has been fed—ranging from the grass of his native prairie to animal matter in the shape of his brother horse,—none has found so much favour in this country as oats, for furnishing, in the most convenient form, the necessary bone, muscle, and fat growing constituents. We may construct an equivalent in the matter of albuminoid ratio by a mixture of four parts of maize with one of beans, but experience shows that oats suit English horses best; and it is probable that there resides in this grain some special stimulating property absent in others.

Oats alone are incapable of supplying the nitrogenous matters required to replace tissue waste where very hard work is exacted, and the addition of beans is required, and these are very valuable for mature horses, although not suitable for young animals.

A good deal of prejudice exists in many quarters against the use of maize, but there is no doubt, especially in certain states of the food market, that it forms a thoroughly useful and economical food when its deficiency in albuminoids is compensated for by the addition of beans. The large horse-owning companies appear to find it answer their purpose, since it enters so largely into their rations.

Hay is always likely to form the staple diet of the agricultural horse, and it cannot be too good. The farmer often sells his best hay and feeds his own horses on that of very inferior quality, which is not a measure of economy, since bad hay is productive of disease, and especially of broken wind and urinary disorders.

The practice of racking up with vast quantities of hay is happily going out of fashion, but it is still far too common; the bulk of the hay allowed should be chaffed and mixed with the corn. There are several reasons for this; one is the avoidance of waste, since when hay is fed in the rack the horse, in his attempts to cull the best and sweetest of the fodder, pulls out

and drops a good deal on the ground, where it is trodden under foot. A little straw will improve the chaff made from soft hay, and is readily taken ; but it should always be bright and clean, and good oat straw preferred to that of wheat.

A word in conclusion on the subject of cooking, steaming, macerating or fermenting horse provender. It does not pay, and is bad for working horses, causing indigestion, flatulent colic, and other intestinal troubles, because the food is bolted without proper mastication, and no amount of cooking can replace thorough admixture with saliva for the purpose of digestion and assimilation. The large horse-owning corporations, whose object is to get all the work out of the horses that they are capable of performing, and who have large numbers of horses on which to experiment, have discarded cooking in favour of crushed grain and cut hay. The digestive organs of the horse are quite capable of dealing with good food in its raw state.—By M. R. C. V. S., in *Mark Lane Express Almanac*.

3.—*Is Nitrate a Purging Manure ?*

IF this question were to be answered by landlords or land agents, the majority of them would probably reply that it is. Farmers, on the other hand, could bring evidence to show that they cannot do without nitrate if they want to have fair crops. But when any farmer is in the position of an incoming tenant, he is likely to desire as much information as he can obtain as to the quantities of this manure used by his predecessor in the last years of the said predecessor's tenancy.

Nitrate is, or is not, a scourging manure, according to the way in which it is used. There is no doubt that, as applied when it first came into this country in a former generation, it was abused, and from this probably much of the prejudice against it has arisen. When it was first used it was found, of course, to give immense crops, and its application was repeated year after year, the final result—that it would, sooner or later, by excessively stimulating the growth of the plants, use up all the immediately available supplies of phosphoric acid, potash, &c.—never being anticipated.

A few figures from Rothamsted will best put this valuable manure in its true light. The amount of nitrogen absorbed by each kind of crop per acre per annum of an average yield is as follows :—

	Yield.	Nitrogen.		Yield.	Nitrogen.
Wheat ..	30 bus.	48 lbs.	Swedes ..	14 tons	98 lbs.
Barley ..	40 "	48 "	Cabbages ..	25 "	16 "
Oats ..	45 "	55 "	Mangolds ..	22 "	138 "
Meadow Hay ..	1½ tons	49 "	Potatoes ..	6 "	67 "
Turnips ..	17 "	112 "			

That is to say, an ordinary crop has to obtain somewhere—from the soil, the air, or manure—as much nitrogen per acre as is contained in from 100 lbs. to 830 lbs. of nitrate. Of course, practical experience has shown that the chemical composition of a crop is no guide to manuring the same, because a given variety of plant has affinities or powers of its own which may make some unlooked-for ingredient the "dominant" one, while there is the unknown, or little understood action of soil and root microbes. But the fact remains that the plants must get all this amount of nitrogen somewhere, while we further know that, as a soluble plant food, nitrogen must be presented to the roots in the form of a nitrate. Thus it is that nitrate of soda—being the cheapest nitrate in the market—is popular as a source of nitrogen, and thus also its effects are immediate and decided on all crops, except leguminosæ (beans, clovers, &c.), which have been shown in recent years to have their nitrogen supplied to them from the air in the soil by the action of root microbes.

Now, all soils—excepting those like virgin prairie land—are deficient in nitrogen, and probably also in phosphoric acid, but have a large supply of everything else in nine cases out of ten. It follows, therefore, that if a liberal dose of nitrate is applied it will stimulate the growth of the crop at the expense of the other elements of fertility in the soil, and, if this course is persisted in, the fertility of the land will become very much reduced, more especially in phosphoric acid. On this system it becomes a scourge. But, on the other hand, if—as it ought to be—the land is in good condition, or a proportion of phosphatic manure, such as bones, slag, or phosphatic guano, is used at the same time, it is both proper and desirable to use some nitrate.

There is an aspect of the question, however, often lost sight of, that the use of nitrate may tend to enrich a farm as a whole. This statement may seem somewhat paradoxical; but when the particular effect of a dose of nitrate on the crop itself (in contradistinction to the effect on the soil) is examined, it will at once be seen how we get this state of matters. To begin at the beginning, we must refer once more to the Rothamsted experiments. In a paper read before a Science Conference at South Kensington in 1876, Sir J. Henry Gilbert showed that in the average crop of wheat over twenty-eight years on three plots, one of which had been manured with a complex mineral manure, another to which 82 lbs. of nitrogen as ammonia had been

added, and a third receiving 82 lbs. nitrogen as nitrate, there was an increase in the one ingredient carbon of 125 per cent. for the ammonia, and 153 per cent. for the nitrate, over the plot which had received mineral manure only. Now, be it noted that this is an increase of carbonaceous matter, principally starch, sugar, and similar valuable carbohydrates, which is wholly absorbed from the air as carbonic acid gas, is combined with water in the chemical processes in the leaf, and robs the soil of nothing. Further, let it be noted—as every farmer knows who has been using his eyes—that the outside and visible effect of nitrate is to stimulate the growth of leaf and stalk, and not that of the grain: in corn crops, for instance, it tends to cause the development of large, flaggy leaves of a darker green colour. Of course, there is a partly corresponding amount of mineral matter taken up from the soil to assist in the extra development of the plant; but the principal facts are, first, it is the carbohydrates that are abnormally developed, which take nothing from the soil; and, secondly, it is the leaf and stalk of the plant as a whole which are most increased. But in the ordinary practice of farming root-crops are consumed at home, and, if nitrate has been used in their growth, there is an extra proportion of sugar and other carbohydrates present, and a greater growth of leaf—the latter being generally returned when the roots are topped to the land where it grew. Again, stalk and leaf constitute fodder in the case of grain crops, also consumed at home; so that, leaving out of account the comparatively small number of farmers who sell all crops straight off, the immediate result of the ordinary use of nitrate is to increase the amount of straw and roots for home consumption; that is, to increase the bulk of farmyard manure returned to the land. Every farmer who is particular about the quality of his sample of grain will use nitrate sparingly, because, while it is liable to cause excessive growth of the straw, it is also apt to cause lodging, and spoil the grain.

We are therefore bound to come to the conclusion that where hay, straw, and roots are grown for home consumption, the liberal use of nitrate of soda is of direct benefit to the farm, and will tend to the enriching and raising of the “condition” of the soil. Even where the crops are sold off, the drain on the fertility of the soil is kept up with comparative ease, being practically confined to the phosphoric acid alone. The growth of hay for sale is the most common form of an exhausting crop; but when the components of this crop are stated in equivalent manures, it will be seen how small is the proportion of phosphate required to balance the nitrate applied. Thus the $1\frac{1}{2}$ ton of meadow-hay of the above table contains as much

nitrogen as is found in $2\frac{1}{2}$ cwt. of nitrate, while only as much phosphoric acid as would be contained in 80 lbs. of basic slag. As 1 cwt. of nitrate is a common dressing to an acre of hay, the above figures show that the soil cannot be depleted of the other ingredients at a very rapid rate. A very moderate dressing of other manure will keep up the standard of fertility in the soil. Of course, if nitrate alone is employed year after year the result will be disastrous; but we may leave off where we began, that nitrate is good or bad, according to the way in which it is used: good if used in conjunction with other fertilisers, or where produce is grown for home consumption, and bad if used continuously and alone where the produce is all sold off.—P. MCCONNELL, B.Sc., in *The Farmer and Stock-Breeder Year-Book*.

4.—*On the Farm Team, and a Teamsman's Duties.*

"LIKE master, like man" is a trite saying, the general truth of which is found apparent in every sphere where the twain are brought together. If a master concerns himself but little with the well-doing of the team, it is, perhaps, scarcely reasonable to expect that the man will evince greater interest therein than his employer. But to every rule there are exceptions; and in cases where the farmer himself is heedless of the manner in which his horses are attended to, one often finds men who leave nothing undone to secure the comfort and welfare of their teams. Let us take a glance at some of the duties which should be performed by those under whose care the farm horses are placed.

When horses return from the day's work, not only should all matter which has accumulated inside the hoofs be at once removed, but the feet ought also to be thoroughly washed with a brush and cold water. The instrument used for picking earth or other substances from a horse's feet is better made of some hard wood, cut to a blunt point at the end, rather than of metal. One occasionally sees a sharp iron or steel pick used, which, in careless hands when a restive animal suddenly moves his leg, may easily enter a soft frog, and set up inflammation. If it is made a rule always to use wood, no fear of damaging the foot can exist. For washing purposes, an ordinary cheap scrubbing brush serves every end. All deposits of dirt should be thoroughly cleansed from the legs, the pasterns and heels, which are too often slurred over by the thoughtless, receiving due attention. When these proceedings have been

properly carried out, the remaining water ought to be dashed over the legs, and the hand then passed downwards with a firm grip, in order to press out all the moisture possible. If a sponge is used instead of the hand, so much the better. It should be made a rule that all washing is to be done outside the stable. The time required to attend to each horse in this manner does not occupy more than a few minutes, and the operation is thoroughly essential to the animal's well-being; sending a horse to bed with clean skin and clean feet obviates the development of all maladies which derive their origin from neglect of these details; while bathing the legs with cold water both in the evening and the morning has a desirably bracing effect. Many farmers seem to have the unwarrantable idea that any treatment is good enough for a cart horse, and not till signs of grease, cracked heels, or fever in the feet become apparent is a conviction of the error brought home to their minds.

The teamsman should have his horses' stalls littered down and the food placed ready for them in their racks and mangers before they are allowed to enter the stable. A stall is never so well and evenly littered if the animal is allowed ingress beforehand, and the man has to work the straw about between its legs. There should be neither extravagance nor stinting in the matter of litter; the one entails an unnecessary waste of straw, the other inflicts discomfort upon the animal, especially in cold weather, if he is one of the kind given to shuffling about—thus displacing the bed with his feet—before lying down. Water ought always to be given before the horse enters the stable.

The first things to be done in the morning are to take each horse from his stall, to draw the litter aside—thus leaving a clear space for the animal to stand upon—and then to place his breakfast in rack and manger. Water must be offered him before re-entering the stall, while his feet should be cleared of all ordure which may have accumulated during the night. These things having been done, the teamsman has not only an open field in which to work, but also a certain quantity of time to fill up while his horses are consuming their morning meal. Let him, therefore, make it a practice to occupy this time by picking out with the fork all straw which is fit for further use as litter, and heaping it up lightly, so that the air can reach every part and dry it thoroughly before evening comes. The remaining portion of the bed must be conveyed to the place set apart for its reception. If everything is taken out of the stable early in the day, the floor will be quite dry and the whole building well aired and purified in a few hours; leaving a

lamp bed untouched till almost the moment when the stall is again required for use, a system often pursued by the careless, is an altogether bad arrangement. Stable doors and windows should always be left open during the day.

When the foregoing duties have been executed, the teamsman's attention may again be turned to the horses themselves, who will by this time have made good headway with their breakfasts. Each animal should be thoroughly groomed with a stiff brush. Scouring with a curry-comb is not really necessary more than once a week, although its constant use is good for both the coat and the skin of any horse. Mane, forelock, and tail ought then to be run through with a wide-toothed comb, and afterwards with the dandy-brush, an operation which must take place at least twice a day if it is wished to keep the hair smooth and bright. Plaiting the mane and tail is merely a matter of individual taste. The final duty of a teamsman before allowing his horses to be taken to the field is that of examining every shoe to see if all is right, and at once reporting to his master anything that may be the matter, or, if he should have standing instructions to that effect, sending the animal straight away to the forge.

As horses differ, often largely, in both the quantity and kind of food required to keep them in good working condition—certain animals, for instance, when at hard daily work will only thrive if beans are given them—it must be ascertained what is best suited to each one of the team, both in amount and in the relative proportions of hay and corn, and a set allowance should be strictly adhered to from day to day. If one of them is found to be doing not quite so well as he ought, it is easy for the master, knowing, as he does, exactly what food each animal has been having, to make a pretty good guess at the change required, and to order an alteration in diet accordingly. It is a good plan to have nailed up in the stable a list of the horses' names, and, following them, the kind and quantity of food which each receives. This, besides being a guide to the teamsman, serves as a permanent and useful register when one has a horse which does badly and experiments are necessary to find out what suits him best in the way of food.

The writer has only noticed a few of those things connected with horse-keeping which are frequently overlooked, or regarded as not worth consideration. Care bestowed upon a horse is never thrown away; anything which tends to keep him in good condition is money in the owner's pocket. If physical comfort and cleanliness are made subjects of attention, all animals will do better than when these are disregarded. Horses are no

exception to the rule, but rather a standing example, of the different effects of care and neglect. It is, perhaps, not too much to say that a horse is more subject to ailments than any other animal living. The number of his ills is legion. Want of due attention is directly responsible for many of these ills. Proper regard for the animal's welfare will prevent the development of others to which he is constitutionally predisposed. "Prevention is better than cure" should be the fundamental axiom of all horse-keeping, applying no less forcibly to the farm team than to the stud of Hackneys or hunters.—By WANJEE, in *Vinton's Agricultural Almanac*.

The Farmer's Library.

NOTES AND REVIEWS OF NEW BOOKS.

—*The Journal of the Royal Agricultural Society of England.*
Vol. VII. John Murray, London.

Of the numerous and valuable papers which have appeared in this Journal during the past year, two have attracted more than ordinary notice, viz., those on "Soil Inoculation," by Dr. N. H. J. Miller, and on "Nitragin," by Dr. J. A. Voelcker. It is now well known that on the roots of Leguminous plants, *i.e.* clovers, peas, &c., there are found small nodules which contain bacteria. It has also been proved that these bacteria, in some way not yet understood, enable the plant to obtain nitrogen from the air. Following the practice, which has become general in other bacteriological work, of inoculating material with bacteria, when it is desired to obtain the same results artificially as are found naturally, attempts were made to produce these nodules by placing some of the bacteria which produce them in the soil in which the plants were grown. When carried out in a small way these experiments gave favourable results. In order to conduct the experiments on a large scale the bacteria had to be prepared in considerable quantities, and it is to this preparation of bacteria that the name "Nitragin" has been given. We object to the name on the ground that hitherto such a designation has been given to the chemical compound formed by bacteria, and not to the bacteria themselves, and this system ought to have been maintained. Whether the result of inoculating soils on a larger scale with these bacteria will prove of advantage, from a farmer's point of view, yet remains to be seen. Up to the present no very conclusive results have been obtained in England, and much must depend upon season. But there is no reason why this system of improving the crops may not become of practical value to English farmers when the subject is better understood, and the conditions favourable and unfavourable to success have been determined.

Dr. Bond contributes an interesting and instructive paper on

"Germs in the Dairy"; Mr. Dan Pidgeon an important article on "Cold Storage"; and Mr. Harold Seeney a thoroughly practical paper on "The Lambing Pen."

2.—*Thorough Cultivation.* By WILLIAM SOWERBY, F.G.S.
London: Swan Sonnenschein and Co.

THE author of this work is a firm believer in the advantage of cultivating the earth to a greater depth than is usual, and this is the meaning which he attaches to the words "thorough cultivation."

To emphasise the importance of this deep cultivation of the soil he has compiled a work, setting forth the many statements which can be found in agricultural literature in support of the practice, more especially by such of the older writers, as Fitzgerald, Blith, Tull, and Stephens, "whose works are no longer extant or available."

The value of deep cultivation few practical or scientific writers dispute. But it necessitates considerable expenditure on the one hand, while on the other hand there is always the risk of bringing to the surface a subsoil which is not suitable for the growth of plants, and which "before it became suitable for sustaining vegetation required to be exposed to the action of the air for one, two, or three seasons."

It is only fair to the author to state that he realises both these facts. But at the same time he has allowed himself to be led away by his hobby, and in no case is this more striking than in the support and prominence he gives to the experiments of Sir A. Cotton.

As these have received considerable attention of late, it may be of interest to consider some of them. It is, however, difficult in this book to distinguish the views or statements of Sir A. Cotton from those of the author, yet the following quotations may serve the purpose of showing to what extremes this subject of deep cultivation has been carried. The experiments made by Sir A. Cotton are thus described: "It was not till I was old that I began to make trifling experiments in cultivation in different gardens belonging to the houses I occupied." What was done in these gardens? The following may be quoted as an example. "It had to be broken up with the pick, and the first operation cost about 6s. a rod, or 50l. an acre. After the first breaking with the pick I dug it with a 16-inch fork. This second digging to about 3 feet deep costs about 25l.

per acre." Then, as to manuring: "At first I gave 100 tons per acre." But he says, "I have greatly modified my ideas about it (manure) of late," and from internal evidence we may judge that 30 tons per acre is now considered sufficient. The method of sowing wheat was as follows: "In spots one and a half, or one and a quarter feet apart each way, four grains in a spot, an inch or two apart, and as soon as they are a few inches high I pull up three, leaving the strongest one." In spite of this enormous outlay an attempt is made to show that a profit results, but in all the calculations to this end we find that only the interest on the capital expenditure is calculated. Now by this assumption the whole question is begged. How can we tell that the money so expended will result in an absolutely permanent improvement. On the contrary, both science and practice lead us to an opposite conclusion—that the results would only be temporary, and that unless the land were kept open to this depth it would soon consolidate and become as it was before. We cannot therefore look upon this initial outlay as an expenditure of capital, for which the farmer should be content to obtain interest only, yet we have no means of estimating the length of time over which its influence would be felt, nor the annual expenditure which would be necessary to maintain the land in such a friable and thorough state of cultivation.

While we think that the author, like Sir A. Cotton, has carried his views too far, there is yet much in the work which is interesting, and would be valuable if it would lead farmers to pay more attention to the *gradual* opening up of the soil, and its proper aeration, *without bringing the subsoil to the surface*. For as to the beneficial results of such practice there can be no question.

3.—*Transactions of the Highland and Agricultural Society of Scotland.* Edinburgh: William Blackwood and Sons.

THIS excellently got up volume of the leading Scottish Agricultural Society contains many valuable articles of interest not merely to Scotch farmers. Among others may be mentioned, "An Inquiry concerning the relation of certain Birds to the Agricultural Interest as shown by their Diet," by John Gilmour; "The Hackney Horse," by H. F. Euresh; and "Fat Formation in the Animal Body," by James Hendrick, B.Sc., &c.

Mr. John Speir, in a paper entitled "The effects of Food on Milk and Butter," gives the results of a long series of experi-

ments which he has carried out, and which lead him following conclusions:—

1st. That at least two foods—viz. young fresh grass grains—have the power of lowering the percentage of fat milk, combined with a tendency to increase the yield of Vetches and decorticated cotton-seed cake have a tendency to increase the fat.

2nd. Most changes of food seem to be followed by an increase of fat in the milk, but there is a strong tendency for it to return to what may be called its normal condition.

3rd. The solids other than fat in the milk seem to rise in much the same manner as the fats, although to a less extent.

4th. An increase of oil in the food does not seem to give an increase of fat in the milk.

5th. The effect of food is more marked in the quality of butter produced than in the quantity.

6th. Some foods seem to produce milk from which a greater percentage of the fat can be recovered by churning than others.

All the above, and other conclusions are supported by setting out in detail the results obtained in the experiments. That these conclusions may, in some respects, not accord with the preconceived notions of our readers we grant. They must also not be lost sight of that other experiments made with the strictest desire to seek only the truth have resulted in conclusions being drawn somewhat at variance with the above. This only shows how very difficult are the problems which an author had set himself to solve. Mr. Speir's paper is, in our opinion, one of the most valuable contributions to dairy science which has been made for some years.

4.—*The Elements of Farming.* By PRIMROSE McCONNELL
London: Vinton and Co.

THIS book has been written as a sort of Introduction to a series of small agricultural volumes known as "Morton's Books of the Farm." It reminds us of that celebrated work by Professor Huxley, written as an Introduction to the Macmillan "Science Primers." It is no reflection upon them if we state that his work did not prove so interesting as Professor Huxley's. Perhaps it was inevitable, so different are the subjects. But we felt that they had one great similarity: both were written by men who thoroughly understood their subject in all its details, both scientific and practical.

author treats of Soils, Crops, Manures, Live Stock, Foods, and Dairying. The chief characteristic of the work is that the author, while he states, concisely and accurately, the leading facts and principles of the many sciences which bear on agriculture, invariably looks upon these as mere adjuncts to farming practice, as aids to the farmer which should enable him to make his farming more profitable. That such is their true object need hardly be stated, though it is too frequently lost sight of by some writers. The work is admirably adapted for its purpose, and should become widely known in agricultural schools as a guide to subsequent and more advanced studies.

5.—*Introduction to Practical Farming.* An Elementary Text-book for use in Irish National Schools. Dublin: Alex. Thorn and Co.

THERE is no author's name attached to this admirable and comprehensive little book, and we trust we are not revealing any Irish secret when we hint that the author is the well-known and esteemed judge of our Society, Professor Carroll, of Glasnevin.

It has been written for those who do not possess any scientific knowledge, and in this respect differs from Mr. McConnell's book, which needs some previous acquaintance with elementary science.

The object of this work is "to lead the pupils of Irish National Schools to give their attention to the principles that underlie the various processes of agriculture," for the author considers that if such pupils commence at school to learn the "reason why," it "may result in their cultivating a spirit of observation that will be useful to them in after life in whatever business or profession they may be engaged in."

We have quoted these words because we firmly believe that they point out the best, if not the only way, by which agriculture may be taught. That this belief is firmly impressed on the mind of the author is evident, for later on we find him saying "The farmer's knowledge may be obtained from books, and from the teaching of persons who have themselves acquired accurate information." But, "his great help to the acquisition of knowledge will be *his own power of observation.*"

The book, then, has been written with a definite object for a definite class of students, by one who evidently knows their most minute requirements. It differs essentially from any other works having the same object that we are acquainted with.

For instance, there is a large section of fifty pages devoted to Gardening. The Crops of the Farm, Manuring, Live Stock, and Dairying each receive attention. Then, in accordance with the practice of foreign school-books on Agriculture, a practice which we have long urged writers in this country to follow, we find such subjects as Poultry and Bees adequately and practically treated. What has struck us as particularly original is the order in which the various subjects are dealt with. It is not the order usually adopted, nor is any explanation given for this departure. We think, however, that a reason is to be found in the fact that the most easily understood subjects, about which it would not be difficult to obtain ocular demonstration, are treated first, while more abstruse subjects, much of which must be taken for granted by the pupils, are left to the end of the work. Thus the author is true to his principles, and strives even in the treatment of his subject to cultivate that "power of observation" on which he rightly lays so much stress.

6.—*The Book of the Dairy.* Translated from the German of W. FLEISCHMANN, Ph.D. By C. M. AIKMAN and R. PATRICK WRIGHT. London: Blackie and Son.

THE greatest living authority on all matters connected with the dairy is Dr. Fleischmann. In 1876 he gave to the world his great work on "The Dairy Industry" ('Das Molkereiwesen'), "a book for practice and science." This was at once recognised as the work of a master-mind and became the standard work to which all students went for information on dairy matters. It was soon translated into French, and for aught we know into other languages, but it has never been translated into English, greatly to the disadvantage of those who, having made dairying their special subject, would have been glad to welcome an English edition.

As years rolled on the study of the dairy industry began to develop in Germany, as it has done to a smaller extent in England. Dairy Schools and Colleges were started, and the need was felt for a reliable text-book, which should enter more into practical, and not so deeply into theoretical, questions relating to dairying. Every one looked to Fleischmann to supply the want, and in 1893 he published his 'Lehrbuch der Milchwirtschaft,' or Text-book of Dairying.

It is a translation of this work into English which now appears under the title 'The Book of the Dairy.'

The original work was a second masterpiece, and was brought out as German publishers know how to bring out such works. The type was excellent, and clearly distinguished (which the English translation unfortunately does not) the more elementary from the more advanced portions of the work.

Fleischmann, like a true man of science, invariably quoted his authorities and gave in foot notes, which are copious, the exact title of every work or article he made use of. Thus the more advanced student was enabled to pass from a study of his work to that of the original memoirs, should he seek further information. Unfortunately these notes are not to be found in the present translation.

The work was written for German pupils. So far as the science of dairying is concerned, the truths which it teaches are universally applicable, but the practice was naturally confined to the manufacture of produce peculiar to Germany. The practical information, so far as butter is concerned, is generally applicable in England, but as regards cheese-making it is of too special a character to be of much value to English students.

Cheddar is the only English cheese described, while Cheshire, Stilton, Lancashire, Wensleydale, and other cheeses peculiar to England, are not so much as mentioned, except perhaps in lists of "foreign" cheeses. Another disadvantage which is inevitable in any translation is that it says nothing of apparatus, methods, or discoveries which have been made or employed since the publication of the original work. For example, no notice is taken of either the Babcock or Gerber methods of testing milk.

Such are the inevitable drawbacks of any text-book not written purposely for the students of the country in which it is to be used.

In spite of these drawbacks, we welcome this translation, for there is no English work extant which deals so fully or so accurately with the science of dairying as does Fleischmann's. In addition, there are many practical points which cannot fail to set readers thinking. What, for instance, will many people say to this sentence: "The indirect determination of the percentage of fat in milk by means of the thickness of the cream layer—*is now quite antiquated*" (page 78, the italics are our own).

Or again, on page 180, where we read: "Only two butter workers can be recommended as well suited for their purpose, and as meeting in a satisfactory way the requirements of such utensils."

We should go even further than Dr. Fleischmann and say only one, and that the one which he first refers to.

The original, then, is a standard work of the utmost value. Have the translators so accomplished their task that the

translation is of equal value to the original? Unfortunately we cannot think they have. The task was, indeed, a most difficult one, and needed in some places the greatest care. Thus, in making a translation of such a work, it is not sufficient merely to use the dictionary equivalent, but it is necessary to determine whether this word in our language conveys to us the same idea as would be conveyed to the German by the word used in the original. We all know, for instance, that the word "whey" has a distinct meaning in England. The liquid which we designate "whey," Dr. Fleischmann calls cheese milk. Now whey is frequently skimmed in England for the production of whey-butter. In Germany it is not only skimmed, but the remaining liquid is evaporated down and a substance called "ziger" produced therefrom. There is still a residual liquid which Dr. Fleischmann calls "Molken," or in the dictionary equivalent "whey." But it is evident that to use the term whey for this liquid in an English translation is most misleading, more especially when we find an analysis of whey given, which is the analysis of this residual liquid unknown in English dairies. Several mistakes arise on page 269 from the confusion of these terms. A somewhat similar difficulty arises on page 200, where the terms "curd" and "coagulum" are used, the first to designate a substance not known in England, except as a laboratory product, and which should have been designated "casein," while the term "coagulum" is given to the substance which is universally known in England as "curd."

Here and there we also find signs of haste in the work of translation: *e.g.* on page 268, Mysost, we read, "This is obtained by treating the whey." Such a bare description is not in Fleischmann's style, and upon referring to the original we find "is obtained by carefully boiling down the whey."

We have pointed out these faults that they may be remedied in a subsequent edition. For the work might be of the greatest value to dairy students, and hence deserves to receive the utmost care at the hands of the translators.

7.—*Diseases of Plants.* By Dr. K. VON TUBEUF. Translated by Dr. WILLIAM G. SMITH, of Edinburgh. London: Longmans, Green and Co.

EVERYTHING living—plant, animal, and man—is liable to disease and injury. When one reads a comprehensive work on medicine, human or veterinary, or studies the works of Miss Ormerod on

sect Pests, a feeling of wonder arises that so many men, animals, and plants manage to exist at all, considering the numerous foes surrounding them.

Now we have a new work presented to us which increases our surprise, for we learn from it that plants are liable to diseases caused by other plants growing on or in them, diseases so numerous that their description fills a handsome volume of nearly 600 pages. Turning to the contents, we were further surprised at the vast stores of information the work contains. The numerous references to original memoirs also attracted our attention, so rare are they even in translations from the German, though so characteristic of the originals as a rule. We should not discover that it was a translation by reading the English, which says much for the translator.

"No such book as this exists in the English language," says Dr. Smith, thinking, doubtless, of his subject, and the statement is true; but we feel inclined to go further, for we cannot remember any scientific work which, both as regards its print, its comprehensive indices, and its 330 beautifully executed illustrations, has been more admirably produced than this one.

The parasitic fungi are present everywhere, during our walks we see them on trees and on shrubs, and we find them to our sorrow in our gardens and greenhouses. But as a rule we simply look at them and wonder. What they are, how they are caused, what steps to take to prevent them coming, or how to destroy them when present, we did not know, nor did we know where to find the information.

The publication of this work will remove this difficulty, and also any excuse we may have previously had for our callous indifference. We therefore rejoiced when it was brought to our notice. But upon commencing its study our spirits were damped. Some years had elapsed since the details of structure and the nomenclature of the parts of parasitic fungi were familiar to us, and by the time we reached page 7 and found the following sentence: "*Ergot* of grain, &c., are also truly parasitic, even though their apothecia or perithecia are produced from hibernating sclerotia, and though their conidia can be saprophytically cultivated on dead pabulum," we had to seek a manual of botany for aid. We regret that the first chapter does not contain a brief description of the structure and growth of fungi with the nomenclature now used to designate their various parts. However, those who have studied botany more recently will probably be familiar with these terms, while those who have forgotten them for a time can refresh their memories; but to anyone who has not studied botany this book would be of little use. It appeals primarily to the

botanist who is interested in the diseases of plants, and therefore especially to those who are teaching in Agricultural Colleges and Schools. It would be well if it were made a textbook among the upper classes in such colleges, for the information it contains is of vital importance to every landlord and land agent. Though highly technical and scientific in its phraseology, yet, thanks to two copious indices, the admirable illustrations, and the fact that in the consideration of each disease its practical significance is not overlooked, the book is of very general interest.

The contents are divided into two parts, the first general, the second a systematic arrangement of the cryptogamic parasites. Even in this second part, we find much information with reference to the best methods of combating an attack of the parasite under consideration. But this part is meant for reference only. Not so the first portion, which, in spite of the many scientific names employed, is most interesting to read. In it we find described the mode of life of the parasitic fungi generally and the effects produced by them. The influences which affect their development, and the conditions which predispose plants to disease, lead naturally to a consideration of "preventive and combative measures."

If we but consider that the potato disease, the rust and smut of cereals, the ergot of grasses, and the mildew or moulds of hops, &c., are all results of parasitic fungi, we shall realise the importance of their study, and thank Dr. Smith for having placed at the disposal of English students the exhaustive treatise of von Tubeuf.

8.—*The Mechanical Analysis of Soils.* By PROFESSOR
MILTON WHITNEY.

DURING the last few years frequent reference has been made in this country to the very valuable investigations made in America respecting the mechanical properties of soils. Foremost among the workers has been Professor Milton Whitney, Chief of the Division of Agricultural Soils of the United States Department of Agriculture. Among his latest bulletins is one upon the above subject, and from that bulletin we quote the following passages:—

"In examining soils it is not sufficient to know the kind and size of the grains that form the framework of the soil, for the arrangement of these grains has a very important

influence upon the relation of the soil to water. Two soils may have the same texture, but maintain very different amounts of water if the grains have a different relative arrangement. One soil may be loamy, while the other may be quite impervious to water. This is one of the most important properties of soils, but so far no satisfactory method has been devised for determining with any exactness the arrangement of the grains constituting the structure of the soil. The most promising method is based upon the flow of a fluid through a given volume of soil. Where the grains are evenly distributed in the soil and the spaces between the grains are of nearly uniform size, the resistance to the movement of air or water is at a maximum, while if the grains are unevenly distributed in the soil as they are in loamy soil, some of the spaces being very much larger than others, the resistance to the movement of air or water is very much less."

"There is often a marked difference in the texture of a soil within the same field and within a radius of a few feet. This unevenness is often indicated by a difference of colour, or in the general appearance of the soil. Further, it is impossible to cultivate the soil and leave it in the same physical condition throughout. A man's footstep on a ploughed field has been known to make such a difference in the physical condition of the soil as to be plainly apparent in the development of the crop throughout the season. The effect of roots also and worm-holes, as well as the occurrence of stones and large gravel, modify very materially the physical conditions of the soil in their immediate neighbourhood."

"The soil appears to be a lifeless inert material, but it is in reality full of life and movement."

3.—*Report of Observations of Injurious Insects.* By ELEANOR A. ORMEROD. London: Simpkin, Marshall and Co.

LIKE its forerunners, this, the twentieth Report, which has been issued by the authoress, contains much valuable information on insect pests. The contents are varied, and appeal to many besides the farmer. The fruit grower will find information regarding insect pests which attack the apple, pear, and currant. The market gardener will be more interested in the description of those beetles, &c., which attack such crops as asparagus, beet, cabbage, and onions.

Those who have pine-woods will be grateful to the authoress for her very full description of the pine beetle. And even the general public may read with interest the account of the house fly, and of that insect which strikes terror into so many lovers of flowers, the common earwig. It will be satisfactory to many to learn that the common house fly who will so persistently spoil their attempts to get forty winks on a hot Sunday afternoon in midsummer, possesses no more evil desire than "to imbibe their perspiration," while this knowledge ought to enable them to provide a simple remedy against future trouble.

Special attention is given in this Report to eel-worms, both in connection with their evil effects on oats and clover as also in producing "onion-sickness."

The great value of Miss Ormerod's work invariably lies in its thoroughly practical character. While the insect pests are not only admirably described and illustrated, so that wherever scientific accuracy is essential, the work is strictly scientific, yet the practical importance of the information is never lost sight of. The two great problems—How to prevent insect attacks, and How to remedy them when present—receive in every instance careful and exhaustive consideration at the hands of the authoress. We welcome this valuable contribution to agricultural knowledge, and trust that Miss Ormerod may long be spared to continue her good work.

Bath and West and Southern Counties Society.

ST. ALBANS MEETING, 1896.

JUDGES.

HORSES.

Shire.—T. B. FRESHNEY, South Somercotes, Louth, Lincs.
Other than Shire.—R. CRAIG, Crondon Park, Ingatestone, Essex.
Hunters, Hacks, Ponies, and Harness.—D. L. BEATTY, The Moat, Rugby.

CATTLE.

Devon.—R. BICKLE, Beechwood, Lifton, Devon; J. CHICK, Compton Valence, Maiden Newton, Dorset.
Shorthorn.—J. T. HOBBS, Maisey Hampton, Fairford; H. GORRINGE, Ashcroft, Kingston-by-Sea, near Brighton.
Hereford.—T. MYDDLETON, Llynaven, Bucknell, Salop.
Sussex.—R. HAMSHAR, Burgess Hill, Sussex.
Jersey.—C. C. TUDWAY, Wells, Somerset; A. T. MATTHEWS, Devonshire House, Uxbridge Road, Ealing, W.
Guernsey.—J. R. NEWBERRY, St. Mary Church, Torquay.
Kerry and Dexter.—G. F. ROUMIEU, Willey Park, Farnham.
Aberdeen Angus.—C. STEPHENSON, Sandyford Villa, Newcastle-on-Tyne.
Butter Tests.—E. MATHEWS, Chequers Mead, Potters Bar, Herts; G. T. BARHAM, College Farm, Finchley.

SHEEP.

Leicester.—H. SMITH, The Grove, Cropwell Butler, near Nottingham.
Cotswold.—T. BROWN, Marham Hall, Downham Market, Norfolk.
Devon.—J. CARPENTER, Blagdon, Paignton, Devon.
Southdown.—A. HEASMAN, Court Wick, Littlehampton.
Hampshire Down.—H. LAMBERT, Babraham, near Cambridge.
Shropshire.—T. F. CHEATLE, Dosthill, Tamworth.
Oxford Down.—R. W. HOBBS, Kelmscott, Lechlade.
Somerset and Dorset Horn.—J. CHICK, Compton Valence, Maiden Newton, Dorset.
Suffolk.—S. W. SLATER, Chevely Hall, Newmarket.

GOATS.

B. M. RAVENSCHROFT, The Noke, Bricket Wood, St. Albans.
VOL. VII.—F. S.

*Judges.***POULTRY.**

W. B. TEGETMEIER, North Finchley, London, N.; P. PERCIVAL, Somerset Court, Brent Knoll, Somerset.

PRODUCE.

Cider.—W. WISE, Midsomer Norton, near Bath.

Cheese, Butter, and Cream.—JUBAL WEBB, Brookville, 3, Phillimore Gardens, Kensington, W.; H. M. J. UNDERHILL, 7, High Street, Oxford.

Honey and Apiarian Appliances.—REV. C. G. W. BANCES, Green Street Green, Dartford, Kent; W. BROUGHTON CARR, 47, Eastdown Park, Lewisham, S.E.; J. H. HOOKER, 9, Beaufort Gardens, Lewisham, S.E.; E. D. TILL, The Priory, Eynsford, Kent.

COMPETITIONS FOR MEN AND WOMEN.**BUTTER-MAKING.**

PROF. CARROLL, Royal Albert Farm, Glasnevin, Dublin; T. RIGBY, The Cedars, Sutton Weaver, *via* Warrington, Cheshire.

HORSE-SHOEING.

T. AUBREY, F.R.C.V.S., 19, Paragon, Bath; F. W. WRAGG, F.R.C.V.S., 17, Church Lane, Whitechapel, London.

SHEEP-SHEARING.

S. BABER, Elborough Farm, Locking, Weston-super-Mare.

MILKING.

J. C. LOCK, Saltford, Bristol.

PRIZE AWARDS, 1896.

* * An animal designated in this list as the "reserve number" is entitled *conditionally*, to succeed to any prize that may become vacant in its class by reason of the animal placed above it by the Judges failing afterwards to qualify.

† Animals, where not otherwise stated, may be considered to have been bred by the Exhibitor.

ABBREVIATIONS EXPLAINED:—S., sire; d., dam; s. of d., sire of dam; y., year; m., month; w., week; d., day; R., Reserve; V.H.C., Very Highly Commended; H.C., Highly Commended; C., Commended.

All ages calculated to May 27, 1896.

HORSES.

FOR AGRICULTURAL PURPOSES.—SHIRE.

(Eligible for the Shire Horse Society's Stud Book.)

CLASS 1.—*Shire Stallion, foaled before 1894.* [5 entries.]

I. (£20) and Silver Cup.*—A. P. McMULLEN, Bouchier's Hall Stud Farm, Tolleshunt D'Arcy, Essex, grey, **Iron Chancellor** (14,677), 3 y., 11 m., bred by J. H. Smith, Alvaston, Derby; s., Chancellor (4959); d., Bonny (vol. xi. 7602); s. of d., Lincolnshire Lad II. (1365).

II. (£10).—Sir WALTER GILBEY, Bart., Elsenham Hall, Essex, brown, **Saxon Harold** (15,337), 3 y.; s., Harold (3703); d., Shire Bella (6983); s. of d., Shire Lad (3308).

R. & H. C. and R. for Extra.*—LORD ROTHSCHILD, Tring Park, Herts, grey, **Paxton** (4604), 12 y., bred by Earl of Ellesmere, Worsley, Manchester; s., Lincolnshire Lad II. (1365); d., Pink (vol. iii. 836); s. of d., Jelly Samson.

CLASS 2.—*Shire Stallion, foaled in 1894.* [6 entries.]

I. (£15).—J. A. BARRS, Nailstone Stud, Nuneaton, brown, **Nailstone Royal Regent** (15,749), bred by R. Morgan, Bahaillon, Newtown, Mon.; s., Regent II. (6316); d., Venture; s. of d., Coming Wonder (3039).

II. (£10).—P. A. MUNTZ, M.P., Dunsmore, Rugby, brown, **Dunsmore Forester**, 2 y., bred by H. H. Atterbury, Manor House, West Haddon, Rugby; s., Dunsmore Forest King (13,019); d., Mettle; s. of d., Samson.

R.—W. GREENWELL, Marden Park, Surrey, bay, **Sterling William** (15,869), bred by J. Hodson, The Lodge, Micklegate, Derby; s., Duke of Normandy (4359); d., Sterling Alberta (vol. xv.); s. of d., Albert Edward (5467).

* Given by Sir Walter Gilbey, Bart., for Best Stallion in the Shire Classes exhibited by a resident in the County of Hertfordshire, a Silver Cup, value 5l.

iv *Prizes awarded to Horses for Agricultural Purpose*

CLASS 3.—*Shire Colt or Gelding, foaled in 1895.* [13 entries]

I. (£15).—LORD BELPER, Kingston Hall, Derby, brown colt, **Bea Lad**, bred by Mrs. Perry Herrick, Beaumanor Park, Leicester; s. Star (14,754); d., Rose (vol. viii. 4373); s. of d., Warrior (2689).

II. (£10).—LORD WANTAGE, K.C.B., V.C., Lockinge, Wantage, colt, 1 y.; s., Prince William (3956); d., Bella Donna; s. of d., Kir (5154).

III. (£5).—A. P. McMULLEN, Bouchier's Hall Stud Farm, T. D'Arcy, Essex, brown colt, **D'Arcy Lad**, 1 y., bred by Lord R. Tring Park, Herts; s., Carbonite (11,173); d., Gipsy Queen (12,45 d., Enterprise of Cannock (2772).

R.—J. E. SHAW, Brooklands, near Halifax, bay colt, **Blythwood** 1 y., 2 m., 1 w., bred by Sir J. Blyth, Bart., Blythwood Stud, Essex; s., Hitchin Conqueror (4458); d., Blythwood Bountiful (s. of d., Harold (3703).

C.—LORD EGERTON OF TATTON, Tatton Park, Cheshire, bay colt, L. Wilding, Catterall, near Garstang; s., Rokeby Rajah (13,520); d. Wildings (vol. xi.); s. of d., Bold Lincoln (2536):—Sir W. GILBE Elsenham Hall, Essex, black colt, **Saxon Samson**, 1 y.; s., (3703); d., Scarsdale Gipsy (8807); s. of d., Black Prince (2984); LORD LLANGATTOCK, The Hendre, Monmouth, bay colt, **Hendre Prince** (vol. xviii.), 1 y., 2 w., bred by A. C. Duncombe, Calwich Ashbourne; s., Prince Harold (14,228); d., Calwich Donna (14,367) Don Carlos (2416).

CLASS 4.—*Shire Mare and Foal, or in-Foal.* [8 entries]

I. (£20).—W. GREENWELL, Marden Park, Surrey, bay, **Ball** (vol. xv.), foaled 1890, bred by R. Kirkham, Ballan, Lytham, Lancs., Mohammed (6173); d., Polley (vol. xii.); s. of d., Northern King with foal by Nailstone Harold (15,254).

II. (£10).—A. RANSOM, Benslow, Hitchin, brown, **Hitchin V1** (vols. x. xi. xii. xiii. xv. xvii.), 9 y.; s., Hitchin Conqueror (44 Hitchin Black Violet (vols. vii. viii. ix. xi. xiii.); s. of d., King (1207); with foal by Carlton Fame (9037).

CLASS 5.—*Shire Mare, foaled before 1893.* [9 entries.]

(The Prizes in Class 5 were given by the St. Albans Local Committee)

I. (£10).—A. J. HOLLINGTON, Forty Hill, Enfield, Middlesex **Rokeby Fuchsia** (15,507), 9 y., bred by J. Spalton, Denby, D. Lincolnshire Boy (3188); d., Lady Gray (15,068); s. of d., Noble shire (10,064).

II. (£5) and Gold Medal.*—P. A. MUNTZ, M.P., Dunsmore, Rug **Melody** (10,451), 8 y., bred by A. B. Freeman Mitford, C.B., Park; s., Harold (3703); d., Madrigal (6647); s. of d., Premier (264

III. (£3.) Silver Cup,† and R. for Gold Medal.*—LORD R. Tring Park, Herts, black, **Windley Lilly**, 4 y., bred by W. E. Windley Hall, Derby; s., Marmion II. (9885); d., Choice (6044); Charter (2740).

* Given by the Shire Horse Society, for best Mare or Filly in Class 5 or 8, subject to Special Conditions stated in Prize Sheet—Gold Medal, v

† Given by Sir Walter Gilbert, Bart., for Best Mare in the Shire exhibited by a resident in the County of Hertfordshire, a Silver Cup, val

Prizes awarded to Horses for Agricultural Purposes. v

R. & H. C.—H.R.H. THE PRINCE OF WALES, K.G., Sandringham, Norfolk, brown, **Moulton Countess**, 9 y., bred by A. Ranson, Benslow, Hitchin; s., Hitchin Conqueror (4458); d., Hitchin Countess; s. of d., Duke of Lancaster (2566).

H. C., and **R.** for Extra.*—C. T. PART, Aldenham Lodge, Radlett, St. Albans, grey, **Aldenham Dame** (12,253), 6 y., bred by W. G. and A. H. Winter, Thorne, Doncaster; s., Lincolnshire Lad II. (1365); s. of d., Royal Albert (1885).

H. C.—LORD EGERTON OF TATTON, Tatton Park, Cheshire, black, **Tatton Fidy**, foaled 1889, bred by T. Thompson, Pointer House, Inskip, near Preston; s., Cressy (4339); d., Tidy Thompson (vol. ix.); s. of d., Crisis (556):—and **H. JAGGAR**, Emley, near Wakefield, grey, **Larky Lass**, foaled 1891; s., Lincolnshire Lad II.; d. by Lancaster.

CLASS 6.—Shire Filly, foaled in 1893. [7 entries.]

I. (£10).—W. GREENWELL, Marden Park, Surrey, black, **Princess May** (vol. xvi.), bred by G. Cox, Elmton Park, Chesterfield; s., Bar None (2388); d., Violet (vol. xiii.); s. of d., Don John (3596).

II. (£5).—W. GREENWELL, black, **Harold's Flower** (vol. xvii.), bred by F. W. Peacock, Vernon's Oak, Somersal, Derby; s., Harold (3703); d., Sudbury Hymen (vol. xvii.); s. of d., Honest Prince (1058).

III. (£3).—G. D. and W. J. THODY, Clothall, Baldock, bay, **Baldock Rose** (17,698), 3 y., 1 m., 2 w.; s., Hydrometer (3744); d., Bonny II. (4670); s. of d., Endymion (3073).

R.—A. J. HOLLINGTON, Forty Hill, Enfield, Middlesex, bay, **Saxon Folly** (18,840), 3 y., bred by Sir W. Gilbey, Bart., Elsenham Hall, Essex; s., Norman Conqueror (7940); d., Follipul (4099); s. of d., Bold Tom (2995).

C.—C. T. PART, Aldenham Lodge, Radlett, St. Albans, bay, **Saxon Link** (18,843), 3 y., bred by Sir W. Gilbey, Bart.; s., Norman Conqueror (7940); d., Link (3414); s. of d., Little Britain (2824).

CLASS 7.—Shire Filly, foaled in 1894. [14 entries.]

I. (£10).—P. A. MUNTZ, M.P., Dunsmore, Rugby, brown, **Dunsmore Fleur de Lis** (19,862), 2 y.; s., Dunsmore Willington Boy (13,021); d., Dunsmore Bracelet (12,197); s. of d., The Boy (3358).

II. (£5).—LORD EGERTON OF TATTON, Tatton Park, Cheshire, bay, **Tatton Countess**; s., Royal William II. (12,207); d., Duchess (vol. xiv.); s. of d., Carlton Banker (9017).

III. (£3).—J. A. BARRS, Nailstone Stud, Nuneaton, bay, **Nailstone Precocious**, bred by J. Price, Bamsheath, Atherstone; s., Nailstone Rising Star (14,754); d., Carmen (11,862); s. of d., Measham Chief (6124).

R.—LORD ROTHSCHILD, Tring Park, Herts, brown, **Nailstone Royal Empress**, 2 y., bred by R. L. Ward, Drayton, Uppingham; s., Nailstone Royal Stamp (13,372); d., Magpie (vol. xi. 8427); s. of d., Harold (3703).

H. C.—LORD EGERTON OF TATTON, bay, **Kingston Banner**, bred by Lord Belper, Kingston Hall, Notts; s., Harold (3703); d., Bonny (9477); s. of d., Honest Prince (1058).

C.—F. CRISP, J.P., White House, New Southgate, bay, 2 y., bred by J. Flinn, Tednambury, Bishop Stortford; s., Willington Royal (12,668); d., Dunsmore Berry; s. of d., Arbitration (4208).

* Given by Sir Walter Gilbey, Bart., for Best Mare in the Shire Classes exhibited by a resident in the County of Hertfordshire, a Silver Cup, value 5l.

vi *Prizes awarded to any Agricultural Breed except Shire.*

CLASS 8.—*Shire Filly, foaled in 1895.* [18 entries.]

I. (£10).—P. A. MUNTZ, M.P., Dunsmore, Rugby, brown, **Bonny Mistress**, 1 y., bred by K. H. Wright, Yelvertoft Manor, Rugby; s., Dunsmore Masterman (12,874); d., Sturton Bonny (11,052); s. of d., Carlton Emperor (5666).

II. (£5).—LORD ROTHSCHILD, Tring Park, Herts, grey, **Mooriah Maiden**, 1 y., bred by R. Wainwright, Sweeney, Oswestry; s., Regent II. (6316); d., Dorothy; s. of d., Lincolnshire Lad II. (1365).

III. (£3).—LORD LLANGATTOCK, The Hendre, Monmouth, bay, **Hendre Fairy**, 1 y., bred by R. Jones, Tyrssa, Llanyblodwell; s., Hypothesis (13,181); d., Diamond (16,537); s. of d., Brown Stout (5602).

R.—D. CRAWFORD, Potterells Farm, Hatfield, Herts, brown, **Mims Rose**, 1 y., 1 m., 2 w.; s., Harold Harefoot (13,147); d., Mims Maggie (vol. xiii.); s. of d., English Oak (2771).

H. C.—H.R.H. THE PRINCE OF WALES, K.G., Sandringham, Norfolk, brown, **Lady Topsy**, 1 y.; s., Calvice Topsman (8959); d., Hindly Lady; s. of d., All Here (4829);—and A. P. McMULLEN, Bouchier's Hall Stud Farm, Tolleshunt D'Arcy, Essex, brown, **D'Arcy Queen**, 1 y., bred by M. Pate, Ely, Cambs.; s., Ely Harold (11,367); d., Ely Queen (9925); s. of d., Sutton Tom (4078).

C.—J. E. SHAW, Brooklands, near Halifax, bay, **Springflower**, 1 y., 3 m.; s., Standard III. (13,610); d., Sunflower (1926); s. of d., What's Wanted (2332).

ANY AGRICULTURAL BREED EXCEPT SHIRE

CLASS 9.—*Mare and Foal, or in-Foal.* [5 entries.]

I. (£20).—LORDS A. and L. CECIL, Orchardmains, Tonbridge, Kent, bay Clydesdale, **Flower of Kilbride** (11,253), 6 y., bred by M. Arthur, jun., Carling, West Kilbride; s., Lord Erskine (1744); d., Mary of Carling (4382); s. of d., Luck's All (510); with foal by Exquisite (8621).

II. (£10).—MISS E. C. TALBOT, Margam Park, Port Talbot, brown Clydesdale, **Carissima**, 7 y., 2 m., 1 w., bred by Lords A. and L. Cecil; s., Claymore (3522); d., Darling (1093); s. of d., Topsman (886); with foal by Montrave Major (9623).

CLASS 10.—*Filly, foaled in 1893.* [4 entries.]

I. (£7).—LORDS A. and L. CECIL, Orchardmains, Tonbridge, Kent, dark brown Clydesdale, **Crown Imperial**, 3 y., 1 m., 2 w.; s., Crown of Royalty (9177); d., Cynthia (11,252); s. of d., Claymore (3522).

II. (£4).—J. Brown, Marden Farm, Hertford, bay Clydesdale, **London Hassie**, 3 y., 1 w., bred by J. Young, Platland, Dundonald, Ayrshire; s., Prince Alexander (8899); d., Princess of Avondale; s. of d., Prince of Wales (673).

III. (£2)*.—LORDS A. and L. CECIL, bay Clydesdale, **Cigarette**, 2 y., 10 m., 4 d.; s., Claymore (3522); d., Dautie (911); s. of d., Paisley Jock (581).

R.—MISS F. C. TALBOT, Margam Park, Port Talbot, dark brown Clydes-

* Specially recommended.

ale, **Margam Queen**, 3 y., 1 m., 2 w.; s., Crown of Royalty; d., Carillon; . of d., Claymore.

CLASS 11.—Filly, foaled in 1894. [4 entries.]

I. (£7.)—Miss E. C. TALBOT, Margam Park, Port Talbot, brown Clydesdale, **Margam Bell**, 2 y.; s., Tullyallon (9455); d., Ambrosine.

II. (£4.)—LORDS A. and L. CECIL, Orchardmains, Tonbridge, Kent, bay Clydesdale, **Coronation Bell**, 2 y., 8 d.; s., Crown of Royalty (9177); d., Campanella (4480); s. of d., Druid (1120).

III. (£2)*—J. BROWN, Marden Farm, Hertford, bay Clydesdale, **London Lilly**, 1 y., 9 m., 3 w.; s., Earl Percy (6707); d., Winsome Maroon (12,415); s. of d., Prince of Kyle (7155).

R.—S. F. PORTER, Walken Bury, Stevenage, Herts, chestnut, white legs, **Maid of the Mill**, 2 y.; s., Walken Duke.

CLASS 12.—Filly, foaled in 1895. [3 entries.]

I. (£7.)—LORDS A. and L. CECIL, Orchardmains, Tonbridge, Kent, bay Clydesdale, **Caress**, 1 y., 2 m., 12 d.; s., Prince Eddie (9637); d., Cynthia (14,252); s. of d., Claymore (3522).

II. (£4.)—J. BROWN, Marden Farm, Hertford, bay Clydesdale, **London Diamond**, 10 m., 2 w.; s., Royal Reward (10,003); d., Winsome Maroon (12,415); s. of d., Prince of Kyle (7155).

R.—Miss E. C. TALBOT, Margam Park, Port Talbot, brown Clydesdale, **Margam Rose**, 1 y., 3 w.; s., Montrave Major (9623); d., Carillon.

ANY AGRICULTURAL BREED.

CLASS 13.—Gelding, foaled in 1892. [2 entries.]

I. (£7.)—J. HOLM, Waterend, Ongar, Essex, bay Clydesdale, **Jolly**, 3 y., 10 m., 2 w.; s., Dolfin; d., Jean.

II. (£4)*—LORD WANTAGE, K.C.B., V.C., Lockinge, Wantage, brown shire, **Thicket Charlie**, 4 y., bred by J. J. Dunnington Jefferson, Thicket Priory, York; s., Pride of Blagdon (6272); d., Violet; s. of d., Yorkshire (4193).

CLASS 14.—Gelding, foaled in 1893. [5 entries.]

I. (£7.)—L. DE ROTHSCHILD, Ascott Home Farm, Leighton Buzzard, bay, **Prince**.

II. (£4.)—LORDS A. and L. CECIL, Orchardmains, Tonbridge, Kent, brown Clydesdale, **Sandy**, 3 y., 2 m., 20 d.; s., Crown of Royalty (9177); d., Clara (11,250); s. of d., Claymore (3522).

III. (£2)*—D. CRAWFORD, Potterells Farm, Hatfield, Herts, bay shire, **Drayman**, 3 y., 2 m.; s., Hitchin Drayman II. (13,165); d. Mims Maggie (vol. xiii.); s. of d., English Oak (2771).

CLASS 15.—Gelding, foaled in 1894. [4 entries.]

I. (£7.)—LORD LLANGATTOCK, The Hendre, Monmouth, bay shire, **Hendre Waggoner**, 2 y., bred by — Cotton, Derbyshire; s., Prince Harold (14,228).

* Specially recommended.

II. (£4.)—**LORD WANTAGE**, K.C.B., V.C., Lockings, Wantage, grey shire, **Rokeyby Ronald**, 2 y., bred by J. Parnell, Rugby; s., **Rokeyby Rajah** (13,520); d., **Rokeyby Fuchsia**; s. of d., **Lincolnshire Boy** (3188).

III. (£2.)*—**LORDS A. and L. CECIL**, Orchardmains, Tonbridge, Kent, bay Clydesdale, 2 y., bred by W. Graham, Eden Grove, Penrith; s., **Patrician**.

HUNTERS.

CLASS 16.—*Hunter Mare and Foal, or in-Foal.* [6 entries.]

I. (£20.)—**HOLT** and **HOLT NEEDHAM**, Castle Cary, Somerset, bay, **Goodcraft** (187 H.I.S.), 10 y., bred by the Compton Stud Co, Sandley, Gillingham; s., **King Crafty**; d., **Good 'Un** (130 H.I.S.); with foal by **Yardarm**.

II. (£10) and **Gold Medal**.†—**Mrs. G. ARMSTRONG**, Clayhill Farm, Enfield, N., grey, **Sweetheart**, 9 y., bred by the late J. Boyle, Newtownarde, Ireland; s., **Pathfinder**; with foal by **Pireaux**.

III. (£5.)—**V. M. MARTIN**, Shenley Lodge, Ridge Hill, Barnet, Herts, brown, **Sunbeam**, 3 y., 11 m., 3 w., 4 d.; s., **Betlow**; d., **Bay Flower**; with foal by **Royal Page**.

CLASS 17.—*Hunter Mare or Gelding, foaled in 1892, to carry not less than 14 stone.* [7 entries.]

I. (£20.)—**EARL OF DYSART**, Buckminster Park, Grantham, chestnut gelding, **Shark**, 3 y., 11 m. about, bred by W. Hunt, Deene, Wansford, Northants; s., **Toscano**; d., **Fan**; s. of d., **Rivet**.

II. (£10.)—**T. BRADLEY**, The Manor Farm, Uffington, Stamford, brown, **Sultan**, 4 y.; s., **Havoc**; d., **Sally**.

III. (£5.)—**G. E. BROWN**, Radford Hall, Leamington, dark chestnut gelding, **The Toff**, 4 y., 1 m., bred by W. Hosken, Pulsack, Hayle; s., **Uncle Sam**; d., **Violet**.

R. & H. C.—**D. CHRISTY**, jun., Margaretting Hall, Ingatstone, Essex, grey gelding, **Blue Peter**, 4 y., bred in Ireland.

CLASS 18.—*Hunter Mare or Gelding, foaled in 1892, to carry not less than 12 stone.* [16 entries.]

(The Prizes in Class 18 were given by the St. Albans Local Committee.)

I. (£20.)—**EARL OF DYSART**, Buckminster Park, Grantham, chestnut gelding, **Champion**, 4 y., 2 m., 2 w., bred by the late J. Mount, Gunby, Lincolnshire; s., **Blue Blood**; d., **Lady Ethel**; s. of d. **Light Bob**.

II. (£10.)—**H. E. THORNLEY**, Radford Hall, Leamington, bay filly, **Eleanor**, 4 y., 3 w., bred by W. Mugeen, Douthwaite Hall, Kirbymoorside, Yorkshire; s., **Spendthrift**; d., **Madam**; s. of d., **G. Ostaldestone**.

III. (£5.)—**W. P. JONES**, Cleve Lodge, Downend, Gloucestershire, chestnut gelding, **Blue and Buff**, 4 y., bred by the Duke of Beaufort, Badminton; s., **The Cob**; d., **Mrs. Gilflorey** (822, H.I.S.); s. of d., **Blood Royal**.

* Specially recommended.

† Given by the Hunters' Improvement Society. A Gold Medal, or a Bronze Medal and 5*l.*, for the Best Hunter Brood Mare, registered in the Record of Hunter Mares and Sires, in Class 16, in-Foal to, or with Foal at Foot by, a Thoroughbred Horse or Registered Hunter-Sire, subject to conditions stated in Prize Sheet.

R.—D. CHRISTY, jun., Margaretting Hall, Ingatstone, chestnut filly, **Lay Belle**, 4 y., 1 m., 2 w.; s., Chellwood; d., Victoria.

CLASS 19.—*Hunter Filly or Gelding, foaled in 1893.* [7 entries.]

I. (£15.)—HOLT and HOLT NEEDHAM, Castle Cary, Somerset, brown mare, **Nightingale**, 3 y., 1 m., bred by V. A. Sherrin, High Ham, Langport; s., Lancastrian; d., Ruby; s. of d., Glenmore.

II. (£10.)—EARL OF DYSART, Buckminster Park, Grantham, chestnut, **Painty**, 3 y., 3 w., 1 d.; s., Drummond; d., Nightingale; s. of d., Westminster.

III. (£5.)—Mrs. G. ARMSTRONG, Clayhill Farm, Enfield, N., grey gelding, y.; s., Waterproof; d., Sweetheart; s. of d., Pathfinder.

R.—P. S. DANBY, Church Farm, Offchurch, Leamington, chestnut filly, **Maisy**, 3 y.; s., Just in Time; d., Fairy Queen; s. of d., Berserker.

CLASS 20.—*Hunter Filly or Gelding, foaled in 1894.* [11 entries.]

I. (£10.)—T. BRADLEY, Manor Farm, Uffington, Stamford, bay, **Sequent**, y., 1 m.; s., Havoc; d., Sally.

II. (£7.)—W. P. JONES, Cleve Lodge, Downend, Gloucestershire, bay gelding, **Morning Star**, 2 y., bred by A. V. Trewin, King's Caple Court, Ross; s., Punjab; d., Venus (1249, H.I.S.).

III. (£3.)—H. E. THORNLEY, Radford Hall, Leamington, brown filly, **Waxy**, 2 y., bred by T. Bradley; s., Golden Crown; d., Kitty.

R. & C.—V. M. MARTIN, Shenley Lodge, Ridge Hill, Barnet, bay gelding, **the Baron**, 2 y., 2 m., 2 d.; s., Royal Page; d., Baroness; s. of d., Truefit.

CLASS 21.—*Hunter Filly, Colt or Gelding, foaled in 1895.*

[9 entries.]

I. (£10.)—T. BRADLEY, Manor Farm, Uffington, Stamford, chestnut filly, **Waxy Alice**, 1 y., 1 m.; s., Golden Crown; d., Kitty.

II. (£7.)—T. BRADLEY, brown colt, **Sequel**, 1 y., 1 m.; s., Havoc; d., Sally.

III. (£3.)—HOLT and HOLT NEEDHAM, Castle Cary, Somerset, bay filly, **Crafty**, 1 y., 1 m.; s., Yardarm; d., Goodcraft (187, H.I.S.); s. of d., King Crafty.

R.—W. P. JONES, Cleve Lodge, Downend, Gloucester, brown colt, **Evening Star**, 1 y., bred by F. W. Barling, New House, Ross; s., Apollo; d., Venus (1249, H.I.S.).

HACKNEYS.

CLASS 22.—*Hackney Mare and Foal, or in-Foal.* [5 entries.]

(The Prizes in Class 22 were given by the St. Albans Local Committee.)

I. (£20.)—Sir W. GILBEY, Bart., Elsenham Hall, Essex, chestnut, **Lady Heyingham** (2925), 8 y., bred by H. Livesey, Rotherfield, Sussex; Danegelt (174); d., Dorothy (2016); s. of d., Lord Derby 2nd (417); with foal by Agility (2799).

II. (£10.)—W. S. FORSTER, Gore Court, Maidstone, bay, in-foal, **Olive Ree**, 7 y., bred by W. Coulson, Hook, Goole; s., Lord Derby 2nd (417); d., Lady Audley; s. of d., Royal George (683).

III. (£5.)*—W. S. FORSTER, chestnut, **Nellie** (5931), 5 y.; s., Vigorous (1215); d., Filbert (2060); s. of d., The Colonel (149); with foal by Danegelt (174).

**CLASS 23.—Hackney Mare or Gelding, foaled before 1892,
over 14 hands. [6 entries.]**

I. (£10.)—G. SLATER, The Horse Repository, Canterbury, chestnut, **Masterpiece**, aged.

II. (£5.)—P. GORDON, 12, Charles Street, Berkeley Square, London, bay gelding, **Look Behind**, 7 y.

III. (£2.)—Capt. F. COOKSON, Dane End, Ware, Herts, chestnut mare, **Princess**, 6 y.

**CLASS 24.—Hackney Mare or Gelding, foaled in 1892 or 1893,
over 14 hands. [5 entries.]**

I. (£10.)—F. J. BATCHELOR, The Reddings, Moor Green, near Birmingham, bay mare, **Lady Vigorous**, 4 y., bred by G. Pearson, Wymondon; s., Vigorous; d., Lady Kathleen; s. of d., Confidence.

II. (£5.)—A. MCILWRAITH, Campbellfield, St. Albans, chestnut gelding, 4 y., 1 m.; s., Candidate; d., Polly.

III. (£2.)*—P. GORDON, 12, Charles Street, Berkeley Square, London, chestnut gelding, **Menelik**, 4 y.; s., Danegelt; d., Foston Fireaway.

**CLASS 25.—Hackney Mare or Gelding, not over 14 hands.
[8 entries.]**

(The Prizes in Class 25 were given by the St. Albans Local Committee.)

I. (£10.)—W. HOLLINS, Pleasley Vale, Mansfield, Notts., brown mare, **Jemima**, 4 y., bred by T. Hipkins, Honingham, Norfolk; s., Wellington (1363); d., Countess (6513); s. of d., Goldfinder (318).

II. (£5.)—E. S. GODSELL, Salmon's Spring Brewery, Stroud, chestnut gelding, **Nobility**, 6 y.

III. (£2.)—A. S. DAY, Berkeley Stud, Crewe, bay mare, **Magic** (966 F.S.), 9 y., bred by R. Clarke, Tacolneston, Norfolk; s., colt by Dr. Syntax; d., Topsy (1100, F.S.); s. of d., Prickwillow (1100).

R.—J. WOODS, Elizabeth House, High Barnet, bay mare, **Wonder** (H.S.B., vol. xiii. 1105, F.S.), 7 y., bred by H. Gant, Snettisham, Norfolk; s., Model (460); s. of d., Tuck's Model.

PONIES.

CLASS 26.—Pony Mare or Gelding, not over 14·1 hands [8 entries.]

I. (£10.)—S. BRUNTON, Frogmore House, St. Albans, chestnut mare, **Dancing Girl**, 7 y.; s., Canvasser.

II. (£5.)—V. M. MARTIN, Shenley Lodge, Ridge Hill, Barnet, Herts, chestnut mare, **Mayflower**, 5 y., 1 m.; s., Tommy (H.S.B., 1236); d., Lady Betty.

III. (£2.)—F. J. BATCHELOR, The Reddings, Moor Green, Birmingham,

* Specially recommended.

rown, **Mariner**, 7 y., bred by W. King, Hull; s., Lord Derby 2nd; d., Kitty;
 . of d., Wildfire.

HARNESSES.

CLASS 27.—*Harness Mare or Gelding, over 15 hands.* [7 entries.]

(The Prizes in Class 27 were given by the St. Albans Local Committee.)

I. (£10.)—Sir W. GILBEY, Bart., Elsenham Hall, Essex, bay mare, **County Belle** (2658), 7 y.; s., County Member (948); d., Crompton (76); s. of d., St. Giles (687).

II. (£5.)—J. B. JOEL, The Firs, Brondesbury, London, bay mare, **Lady Primrose**, 5 y.; s., The General; s. of d., Lady Excellence.

III. (£2.)—P. GORDON, 12, Charles Street, Berkeley Square, London, bay gelding, **Look Behind**, 7 y.

R. & H. C.—F. W. SILVESTER, Hedges, St. Albans, chestnut mare, **The Baroness**, 8 y.

**CLASS 28.—*Harness Mare or Gelding, over 14 hands, and not over 15.*
 [11 entries.]**

I. (£10.)—S. BRUNTON, Frogmore House, St. Albans, black mare, **Modesty**, 7 y.

II. (£5.)—F. J. BATCHELOR, The Reddings, Moor Green, Birmingham, bay, **Lady Gonville**, 6 y., 1 m., bred by J. Bowhill, Wymondham; s., Wymondham Gentleman; d., Lady Grace; s. of d., Confidence.

III. (£2.)—P. GORDON, 12, Charles Street, Berkeley Square, London, bay gelding, **Lord Windsor**, 5 y.; s., Prince Bardolph (3215); d., Queen (6062).

**CLASS 29.—*Harness Mare or Gelding, over 13 hands, and not over 14.*
 [7 entries.]**

I. (£10.)—A. S. DAY, Berkeley Stud, Crewe, bay mare, **Magic** (966, F.S.), 9 y., bred by R. Clarke, Tacolneston, Norfolk; s., colt by Dr. Syntax; l., Topsy (1100, F.S.); s. of d., Prickwillow (1100).

II. (£5.)—W. HOLLINS, Pleasley Vale, Mansfield, Notts., brown mare, **Femima**, 4 y., bred by T. Hipkins, Honingham, Norfolk; s., Wellington (1363); d., Countess (6513); s. of d., Goldfinder (318).

III. (£2.)—W. HOLLINS, brown mare, **Blank Pearl**, 4 y., bred by Sir H. F. De Trafford, Trafford Park, Manchester; s., The Genus (2082); l., Lady Landseer (2931); s. of d., 2nd Sir Edwin Landseer (1563).

* Specially recommended.

CATTLE.

DEVON.

CLASS 30.—*Devon Bull, calved in 1892 or 1893.* [5 entries.]

I. (£15.)—A. BOWERMAN, Capton, Williton, Taunton, **Pretty Middling 3rd** (3173), 3 y., 8 m., 2 w., 3 d., bred by Sir W. R. Williams, Bart., Horridge, Barnstaple; s., **Pretty Middling** (2859); d., **Fashion** (5865); s. of d., **Duke of Flitton 17th** (1544).

II. (£10.)—J. C. WILLIAMS, Caerhays Castle, St. Austell, **Pretty Middling 4th** (3337), bred by Sir W. R. Williams, Bart., Upcott, Barnstaple; s., **Pretty Middling** (2859); d., **Fiction 2nd** (11,108); s. of d., **Foreman 2nd** (1969).

R. & H. C.—E. MUCKLOW, Whitstone Head, Holsworthy, **Whitstone Landscape** (3371), 3 y., 3 m., 4 w., 2 d.; s., **Lovely Laddie** (2612); d., **Dorothy** (11,670); s. of d., **Lord Wolseley** (2063).

CLASS 31.—*Devon Bull, calved in 1894.* [7 entries.]

I. (£15.)—E. MUCKLOW, Whitstone Head, Holsworthy, **Whitstone Magna Charta** (3527), 2 y., 2 m., 2 w., 6 d.; s., **Whitstone Merryman** (3211); d., **Dorothy** (11,670); s. of d., **Lord Wolseley** (2063).

II. (£10.)—A. C. SKINNER, Pound Farm, Bishop's Lydeard, Somerset, **Duke of Pound 24th** (3423), 2 y., 3 m., 1 w., 6 d.; s., **Masterpiece** (2837); d., **Duchess 7th** (5260); s. of d., **Duke of Farrington** (1323).

III. (£5.)—J. F. R. MORRIS, Marwood, Barnstaple, **Middling Character**, 1 y., 11 m., 6 d., bred by Sir W. R. Williams, Bart., Upcott, Barnstaple; s., **Pretty Middling** (2859); d., **Fancy 6th** (11887); s. of d., **Captain** (2204).

R. & H. C.—J. C. WILLIAMS, Caerhays Castle, St. Austell, **Afterthought**, bred by Sir W. R. Williams; s., **Pretty Middling 2nd** (3172); d., **Fiction 3rd** (11,889); s. of d., **Captain** (2204).

CLASS 32.—*Devon Bull, calved in 1895.* [7 entries.]

I. (£15.)—E. MUCKLOW, Whitstone Head, Holsworthy, **Whitstone Commander-in-Chief** (3670), 1 y., 1 m., 2 d.; s., **Marquis of Wolseley** (3162); d., **Whitstone Rosewater** (12,956); s. of d., **Duke of Pound 16th** (2391).

II. (£10.)—J. F. R. MORRIS, Marwood, Barnstaple, **Deemster**, 1 y., 3 m., 3 w., 6 d.; s., **Medal 2nd** (3029); d., **Daisy 5th** (12,939); s. of d., **Master Froth** (2458).

III. (£3.)—A. C. SKINNER, Pound Farm, Bishop's Lydeard, Somerset, **Duke of Pound 27th**, 1 y., 1 m., 1 d.; s., **Lord Punchard** (3148); d., **Duchess 17th** (8988); s. of d., **Lord Currypool** (1589).

R. & H. C.—J. C. WILLIAMS, Caerhays Castle, St. Austell, **Farrier**; s., **Pretty Middling 2nd** (3172); d., **Fashion 3rd** (12,579); s. of d., **Captain** (2204).

C.—R. C. GARTON, Worplesdon Place, Guildford, **Middling**, 1 y., 2 w., 5 d.; s., **Pretty Middling 2nd** (3172); d., **Flame 4th** (11,891); s. of d., **Captain** (2204);—E. KIDNER, Manor Farm, Cothelstone, near Taunton, **Harold 4th**, 1 y., 4 m., 4 d.; s., **Harold 3rd** (3127); d., **Lady Hestercombe**; s. of d., **Lord Currypool**;—and E. MUCKLOW, **Whitstone Rector** (3676).

y., 1 m., 2 w.; s., Whitstone Curate (3209); d., Dorothy (11,670);
of d., Lord Wolseley (2063).

CLASS 33.—*Devon Cow, in-Milk or in-Calf, calved before 1893.*
[2 entries.]

I. (£15.)—A. C. SKINNER, Pound Farm, Bishop's Lydeard, Somerset, **Myrtle 36th** (13,081), 4 y., 4 m., 2 w.; s., Lord Passmore 2nd (2628);
l., Myrtle 25th (9834); s. of d., Lord Currypool (1589).

CLASS 34.—*Devon Heifer, in-Milk or in-Calf, calved in 1893.*
[4 entries.]

I. (£15.)—A. C. SKINNER, Pound Farm, Bishop's Lydeard, Somerset, **Moss Rose 22nd of Pound** (13,608), 3 y., 3 m., 6 d.; s., Masterpiece 2837; d., Moss Rose 16th (11,737); s. of d., Baron Golsoncott 4th (2193).

II. (£10.)—E. J. STANLEY, M.P., Quantock Lodge, Bridgwater, **Quantock Beauty 11th** (13,638); 2 y., 9 m., 2 w., 2 d.; s., Baronet (1897); d., Beauty 8th (11,404); s. of d., Duke of Wellington (1955).

CLASS 35.—*Devon Heifer, calved in 1894.* [6 entries.]

I. (£10.)—J. C. WILLIAMS, Werrington Park, Launceston, **Flash** (14,287);
., Marmion (2642); d., Flame 3rd (9932); s. of d., Eclipse (1728).

II. (£5.)—J. C. WILLIAMS, Caerhays Castle, St. Austell, **Nessie 2nd**;
., Cardsharper (3082); d., Nessie (7989); s. of d., Sir Michael (1646).

III. (£2.)—A. C. SKINNER, Pound Farm, Bishop's Lydeard, Somerset, **Lady Bourton 3rd of Pound** (14,175), 2 y., 4 m., 1 w., 1 d.; s., Masterpiece 2837; d., Lady Bourton 2nd (11,675); s. of d., Freshman (2408).

R. & H. C.—E. J. STANLEY, M.P., Quantock Lodge, Bridgwater, **Quantock Princess** (14,215), 2 y., 4 m., 1 w., 5 d.; s., Baronet (1897);
., Princess Dorothy (11,039); s. of d., Tempter 2nd (2153).

C.—Hon. E. W. B. PORTMAN, Hestercombe, Taunton, **Cherry** (14,656),
y., 7 m., 1 w.; s., Duke of Currypool (3096); d., Duchess 2nd (12,645);
of d., Nobleman (2848).

CLASS 36.—*Devon Heifer, calved in 1895.* [11 entries.]

I. (£7.)—Sir W. WILLIAMS, Bart., Heanton, Barnstaple, North Devon, **Fashion 5th**, 1 y., 2 m.; s., Pretty Middling; d., Fashion 2nd; s. of d.,
Captain.

II. (£5.)—E. MUCKLOW, Whitstone Head, Holsworthy, **Whitstone New Year's Gift** (14,615), 1 y., 4 m., 3 w., 6 d.; s., Whitstone Landscape 3371; d., Lady Ida (12,385); s. of d., Duke of Bourton (2581).

III. (£2.)—A. BOWERMAN, Capton, Williton, Taunton, **Rosebud**, 1 y.,
m., 1 w., 5 d.; s., Starlight (3514); d., Rose (13,783); s. of d., Palmerston 2474).

R. & H. C.—J. C. WILLIAMS, Caerhays Castle, St. Austell, **Ellen Terry 4th**; s., Captain (2204); d., Ellen Terry 3rd (12,561); s. of d.,
Marmaduke (2280).

H. C.—A. C. SKINNER, Pound Farm, Bishop's Lydeard, Somerset, **Rosalie 2nd of Pound** (14,783), 1 y., 4 m., 1 w., 2 d.; s., Compensator (2942); d.,
Rosalie 2nd (13,087); s. of d., Milkman (2841).

C.—J. C. WILLIAMS, **Temptress 23rd**; s., Doleful (2384); d., Temptress
9th (12,572); s. of d., Marmaduke (2280).

SHORTHORN.**CLASS 37.—*Shorthorn Bull, calved in 1892 or 1893.* [7 entries.]**

I. (£15).—G. HARRISON, Gainford Hall, Darlington, roan, **Champion Cup** (65,240), 3 y., 4 m., 1 w., 4 d., bred by J. D. Willis, Bapton Manor, Codford; s., Challenge Cup (57,029); d., Cineraria; s. of d., Commodore (54,118).

II. (£10).—G. HARRISON, roan, **Lord Boycott 2nd** (65,788), 3 y., 8 m., 3 w., 6 d., bred by W. D. Petch, Singlett Hall, Pocklington; s., Lord Boycott (57,687); d., Miss Baroness 3rd; s. of d., Duke of Hodge Beck (52,762).

III. (£5).—G. L. FOSTER-HARTER, Puckrup Hall, Tewkesbury, roan, **Royal Richard** (66,223), 3 y., 1 m., 1 w., 6 d., bred by W. Taylor, New House, Kendal; s., Jacobite (62,742); d., Bashful Queen; s. of d., Golden Duke (57,391).

R. & H. C.—F. W. BOND, Wargrave Manor, Twyford, Berks, roan, **Royal Gwynne 2nd**, 3 y., 3 w., 2 d., bred by J. Howell, Green Farm, Cardiff; s., Royal Butterfly's Duke 2nd (56,454); d., Cymro Gwynne 3rd (vol. xxxix. p. 427); s. of d., Heathfield (55,852).

CLASS 38.—*Shorthorn Bull, calved in 1894.* [9 entries.]

I. (£15).—H.R.H. THE PRINCE OF WALES, K.G., Sandringham, Norfolk, roan, **Celt**, 1 y., 11 m., 3 w., 5 d.; s., Gael (60,855); d., Lily Barrington; s. of d., Golden Silence (54,377).

II. (£10).—R. STRATTON, The Duffryn, Newport, Monmouthshire, red, **Red Rube** (67,710), 2 y., 2 m., 3 w., 3 d.; s., Medallion (56,175); d., Rose of Duffryn; s. of d., Garnet (51,289).

III. (£5).—H. WYATT, Walton Grange Farm, Aylesbury, red, **Harold**, 1 y., 9 m., 3 w., 2 d.; s., Hercules (54,424); d., Duchess 3rd; s. of d., Vale Duke (58,245).

R. & H. C.—W. GREENWELL, Marden Park, Surrey, roan, **Patriot**, bred by W. H. O. Duncombe, Paisley; s., Liberator (64,260); d., Ruby Queen (H.B., vol. xli.); s. of d., Nansen Duke 10th (63,086).

H. C.—G. HARRISON, Gainford Hall, Darlington, red, **Wiltshire Count**, 2 y., 3 m., 2 w., 1 d., bred by J. D. Willis, Bapton Manor, Codford, Wilts; s., Count Lavender (60,545); d., Wiltshire Daisy; s. of d., Rising Star (54,920).

C.—P. L. MILLS, Ruddington Hall, Nottingham, roan, **Saint Stephen**, 1 y., 11 m., 11 d.; s., Prince Stephen (64,603); d., Jessamine; s. of d., Captain of the Guard (58,596).

CLASS 39.—*Shorthorn Bull, calved in 1895.* [15 entries.]

I. (£15).—P. L. MILLS, Ruddington Hall, Nottingham, roan, **Maringo**, 1 y., 3 m., 3 w., bred by W. Duthie, Tarves, Aberdeen; s., Scottish Archer (59,893); d., Missie 118th; s. of d., William of Orange.

II. (£10).—G. HARRISON, Gainford Hall, Darlington, red roan, **Bright Archer**, 1 y., 1 m., 1 w., 6 d., bred by W. Duthie, Collynie, Aberdeenshire; s., Scottish Archer (59,893); d., Bright Bell; s. of d., Leon (49,860).

III. (£5).—J. D. WILLIS, Bapton Manor, Codford, Wilts, red, **Bapton Javelin**, 1 y., 2 m., 2 w.; s., Prince Stephen (64,603); d., Jacinth; s. of d., Commodore (54,118).

R. & H. C.—C. W. BRIERLEY, Twyford Villa, Brimfield, R.S.O., roan, **Ango**, 1 y., 1 m., 3 w., 2 d., bred by J. Kendall, Oddingley, Eritwich; Captivator (60,445); d., Morwenna 6th; s. of d., Earl of Naworth 3rd 5,663).

H. C.—R. STRATTON, The Duffryn, Newport, Mon., red, **Redstart**, m., 1 w., 1 d.; s., Medallion (56,175); d., Birdseye; s. of d., Bellerophon 7,471).

CLASS 40.—Shorthorn Cow, in-Milk or in-Calf, calved before 1893.

[6 entries.]

I. (£15.)—C. W. BRIERLEY, Twyford Villa, Brimfield, R.S.O., red and hite, **Rosedale Cowslip**, 4 y., 9 m., 3 w., 2 d.; s., Weal King's Farewell 0,159; d., Cowslip; s. of d., Javelin (46,530).

II. (£10.)—Mrs. E. ROSS, Sloc Hill, Hitchin, roan, **Lady Peggy arewell**, 6 y., 11 m., 2 d.; s., Prince of Fame 7th (59,630); d., Lady arewell 3rd; s. of d., Meadow King (50,052).

R.—F. PLATT, Barnby Manor, Newark, Notts, roan, **Dowager of arrington**, 4 y., 2 w., 2 d., bred by P. L. Mills, Ruddington Hall; s., arming Barrington Duke (60,290); d., Dowager of Waterloo; s. of d., Waterloo Victor (56,728).

CLASS 41.—Shorthorn Heifer, in-Milk or in-Calf, calved in 1893.

[11 entries.]

I. (£15.)—C. W. BRIERLEY, Twyford Villa, Brimfield, R.S.O., roan, **Queen f Hearts**, 2 y., 10 m., 6 d.; s., Rosedale Referee (61,650); d., The Queen; of d., Rufus (48,648).

II. (£10.)—J. D. WILLIS, Bapton Manor, Codford, Wilts, roan, **Lavender ountess**, 3 y., 3 m., 2 w.; s., Count Lavender (60,545); d., Lavender 3th; s. of d., Gondomar (55,821).

III. (£8.)—F. W. BOND, Wargrave Manor, Twyford, white, **Welsh Gem**, y., 2 m., 1 w., 5 d., bred by Lord Bute, Cardiff Castle; s., Unionist (60,093); , Bright Gem; s. of d., Lord Granville (64,325).

R. & H. C.—A. E. W. DARBY, Little Ness, Shrewsbury, white, **Ness nowberry**, 3 y., 4 m.; s., Baron Leopold (60,317); d., Ness Bilberry; of d., Proconsul Pippin (56,360).

C.—F. PLATT, Barnby Manor, Newark, Notts, roan, **Sea Lark 2nd**, y., 9 m., 1 w., 5 d., bred by the Marquis of Exeter, Burghley Park, tamford; s., Oxford Gwynne (59,564); d., White Fog; s. of d., Prince of irklevington 4th (53,466).

CLASS 42.—Shorthorn Heifer, calved in 1894. [13 entries.]

I. (£10.)—P. L. MILLS, Ruddington Hall, Nottingham, roan, **Scottish blanche**, 2 y., 3 m., 1 w., 6 d.; s., Master of the Ceremonies (56,162); d., Waterloo Blanche 4th; s. of d., Duke of Stroxtan 2nd (55,632).

II. (£5.)—J. D. WILLIS, Bapton Manor, Codford, Wilts, red, **Seraph**, y., 3 m., 2 w.; s., Roan Robin (57,992); d., Spicey 13th; s. of d., Master-roke (57,751).

III. (£2.)—G. HARRISON, Gainford Hall, Darlington, red, **Rose lossom**, 2 y., 2 m., 2 w., 3 d., bred by S. Campbell, Loft Hills, Kintore, berleenshire; s., Clan Alpine (60,495); d., Roselinty; s. of d., Gravesend 16,461).

R. & H. C.—F. W. BOND, Wargrave Manor, Twyford, Berks, roan, **Wargrave Marechal Niel**, 2 y., 3 m., 1 w., 1 d.; s., Rosedale Farmer (63,234); d., Gertrude 2nd (vol. xxxviii. p. 211); s. of d., Rissington Prince (59,760).

H. C.—C. H. JOLIFFE, Goldicote, Stratford-on-Avon, roan, **Twilight Dream**, 2 y., 4 m., bred by C. W. Brierley, The Lydiates, Brimfield; s., Rosedale George (63,235); d., Strawberry 5th; s. of d., Prosperity (54,876).

C.—Col. I. J. C. HERBERT, C.B., C.M.G., Llanarth Court, Raglan, Mon., red and white, **Beauty**, 1 y., 11 m., 6 d., bred by the late J. A. Herbert, Llanarth Court, Raglan, Mon.; s., Hindlip 103rd (65,652);—and H. WYATT, Walton Grange Farm, Aylesbury, red, **Broughton Duchess 5th**, 1 y., 7 m., 3 d.; s., Hercules (54,424); d., Broughton Duchess; s. of d., Virgil (48,878).

CLASS 43.—Shorthorn Heifer, calved in 1895. [14 entries.]

I. (£7.)—F. PLATT, Barnby Manor, Newark, Notts, roan, **Dewy Morn 2nd**, 1 y., 3 m., 3 w., 6 d.; s., Electric Light (65,443); d., Dewy Morn; s. of d., Flower Prince (58,968).

II. (£5.)—J. D. WILLIS, Bapton Manor, Codford, Wilts, roan, **Bapton Daisy**, 1 y., 3 m., 3 w., 4 d.; s., Adolphus (66,604); d., Wiltshire Daisy; s. of d., Rising Star (55,920).

III. (£2.)—P. L. MILLS, Ruddington Hall, Nottingham, roan, **Mistress Farewell**, 1 y., 3 m., 2 w., 6 d.; s., Master of the Ceremonies (56,162); d., Springhill Farewell; s. of d., Springhill Prince 3rd (58,180).

R. & H. C.—R. STRATTON, The Duffryn, Newport, Mon., white, **Llanfair**, 1 y., 3 m., 4 w.; s., Flag Signal (65,527); d., Llanwern; s. of d., Signet (55,037).

H. C.—C. W. BRIERLEY, Twyford, Brimfield, R.S.O., roan, **Dancing Girl**, 10 m., 3 w., 4 d.; s., Darling's Delight (65,330); d., Cinders;—and P. L. MILLS, roan, **Sittington Dowager**, 1 y., 2 m., 2 w.; s., Master of the Ceremonies (56,162); d., Dowager of Rosedale; s. of d., Duke of Rosedale 19th (49,479).

CLASS 43A.*—Pure Shorthorn Cow or Heifer, in-Milk, subject to Conditions stated in Prize List. [2 entries.]

I. (£10.)—Mrs. E. ROSS, Sloe Hill, Hitchin, roan, **Lady Peggy Farewell**, 6 y., 11 m., 2 d.; s., Prince of Fame 7th (59,680); d., Lady Farewell 3rd; s. of d., Meadow King (50,052).

II. (£5.)†—G. TAYLOR, Cranford, Hounslow, red, **Wild Queen 2nd**, 7 y., 8 m., 2 w., 6 d.; s., Marquis of Kirklevington 3rd (53,277); d., Wild Queen; s. of d., Earl of Siddington 6th (51,189).

HEREFORD.

CLASS 44.—Hereford Bull, calved in 1892 or 1893. [4 entries.]

I. (£15.)—J. H. ARKWRIGHT, Hampton Court, Leominster, **Prince Bulbo** (17,442), 3 y., 3 m., 6 d.; s., Rose Cross 2nd (14,865); d., Blossom 10th; s. of d., Hampton Court (8707).

* The First Prize in this Class was given by the Shorthorn Dairy Prize Fund Committee, and the Second Prize by the Bath and West and Southern Counties Society.

† Specially recommended.

II. (£10).—**EARL OF COVENTRY**, Croome Court, Worcester, **Courtier**, y., 11 m., 3 w., 1 d.; s., Royal Ruler (13,406); d., Counterfeit; s. of d., delbert (8185).

C.—**E. R. PAYNE**, Thornbury Court, Bromyard, **Thornbury Hope** 17,575), 3 y., 1 m., 1 w., 3 d., bred by E. Yeld, Endale, Leominster; s., Iope (13,872); d., Jubilee Peeress (vol. xxii. p. 755); s. of d., Rothschild 3000).

CLASS 45.—Hereford Bull, calved in 1894. [5 entries.]

I. (£15).—**E. YELD**, Endale, Leominster, **Royal Hero** (18,067), y., 3 m., 1 w., 1 d., bred by Sir C. R. Boughton, Downton Hall, Ludlow; s., Royalist 3rd (16,958); d., Plum 6th; s. of d., Grand Duke 5342).

II. (£10).—**J. H. ARKWRIGHT**, Hampton Court, Leominster, **Red Cross** 18,040), 2 y., 3 m., 1 w., 6 d.; s., Rose Cross 2nd (14,865); d., Pearl 5th; s. of d., Conjuror (5264).

H. C.—**R. GREEN**, The Whittern, Kington, Herefordshire, **Sir Richard**, y., 3 m., 1 d.; s., Pioneer (16,269); d., Silver Bell; s. of d., Horace Hardwick (8748).

CLASS 46.—Hereford Bull, calved in 1895. [11 entries.]

I. (£15).—**R. GREEN**, The Whittern, Kington, Herefordshire, **Nonsuch**, y., 4 m., 1 w., 1 d.; s., Pioneer (16,269); d., Nora; s. of d., Defender 98,071).

II. (£10).—**J. H. ARKWRIGHT**, Hampton Court, Leominster, **Montezuma** vol. xxvii.), 1 y., 2 m., 3 w., 5 d.; s., Good Cross (14,569); d., Lively 13th; s. of d., Iroquois (7039).

III. (£8).—**J. PRICE**, Court House, Pembridge, Herefordshire, **David**, y., 3 m., 2 d.; s., Boniface (9600); d., Dowager 2nd; s. of d., Pioneer 14,025).

H. C.—**R. PALMER**, Lodge Farm, Nazeing, Waltham Cross, **Orgon**, y., 4 m., 1 w., 2 d.; s., Prospero (16,917); d., Wideawake; s. of d., Crown Prince (8464).

C.—**T. FENN**, Stonebrook House, Ludlow, **Downton Sportsman**, 1 y., m., 3 w., 6 d.; s. Launcelot (13,917); d., Spot; s. of d., Sir Isaac (5598); and **H. W. TAYLOR**, Showle Court, Ledbury, **Aluminium**, 1 y., 1 m., 1 w., d.; s., Prompter (14,811); d., Clarissa; s. of d., Mohican (8919).

CLASS 47.—Hereford Cow, in-Milk or in-Calf, calved before 1893. [5 entries.]

I. (£15).—**E. W. CADDICK**, Caradox, Ross, **Nina**, 4 y., 8 m., 1 w., 3 d.; s., Sir Edward (14,911); d., Nicola (vol. xvi. p. 91); s. of d., Lord Grosvenor 7804).

II. (£10).—**R. PALMER**, Lodge Farm, Nazeing, Waltham Cross, **Whiskey**, y., 2 m., 3 w., 1 d.; s., Crown Prince (8464); d., Wellingtonia 4th; s. of d., andlord (7073).

H. C.—**H. W. TAYLOR**, Showle Court, Ledbury, **Vain Lady**, 5 y., m., 3 w., 3 d.; s., Cavalier (9682); d., Vain Lass; s. of d., Maidstone 8875).

C.—**E. WIGHT**, Tedstone Court, Worcester, **Dingle**, 8 y., 9 m., 3 w., 5 d.; s., Champion (9686); d., Whitenob 3rd; s. of d., Little Archer (6026).

CLASS 48.—Hereford Heifer, in-Milk or in-Calf, calved in
[5 entries.]

I. (£15.)—R. GREEN, The Whittern, Kington, Herefordshire, **Perilla**, 3 y., 4 m., 2 w., 3 d.; s., Whittern Grove (10,843); d., 1 fection; s. of d., Lord Wilton (4740).

II. (£10.)—J. TUDGE, Duxmoor, Craven Arms, Salop, **Princess** 3 y., 2 m., 2 w., 3 d.; s., Rupert (16,366); d., Golden Pippin; s. of (11,877).

H. C.—E. W. CADDICK, Caradoc, Ross, **Graceful**, 2 y., 5 m., Caradoc Boy (16,617); d., Gertrude (vol. xix. p. 247); s. of d., (4907).

CLASS 49.—Hereford Heifer, calved in 1894. [7 entries]

I. (£10.)—R. EDWARDS, Strangworth, Pembridge, Herefordshire 2 y., 3 m., 3 w., 6 d.; s., Sheriffs Whittern Grove (16,990); d., Bangle Shaftesbury (11,676).

II. (£5.)—W. T. BARNEBY, Saltmarshe Castle, Bromyard, **Lilac** 4 1 m., 2 w., 5 d., bred by the late W. Barneby; s., Ricochet (16, Lilac 3rd; s. of d., Prince Arthur (11,554).

III. (£2.)—R. GREEN, The Whittern, Kington, Herefordshire **Briar**, 2 y., 4 m., 3 w.; s., Pioneer (16,269); d., Wild Rose; s. of Stock (6651).

H. C.—J. PRICE, Court House, Pembridge, Herefordshire, **Gentle** 2 y., 1 m., 3 w., 6 d.; s., Pioneer (14,025); d., Governess; s. of d., (7858).

C.—H. W. TAYLOR, Showle Court, Ledbury, **Whisper**, 2 y., 3 s., Bombardier (12,869); d., Sister Mary; s. of d., Admiral (12,797).

CLASS 50.—Hereford Heifer, calved in 1895. [11 entries]

I. (£7.)—E. YELD, Endale, **Leominster**, 1 y., 3 m., 3 w., 5 d. On (16,800); d., Royal Daisy; s. of d., Assurance (5193).

II. (£5.)—A. E. HUGHES, Wintercott, Leominster, **Bountiful**, 1 2 w., 3 d.; s., Albion (15,027); d., Barbara 2nd; s. of d., Seabreeze

III. (£2.)—EARL OF COVENTRY, Croome Court, Worcester, **Gau** 3 m., 3 w., 1 d.; s., Missionary (16,857); d., Gazette; s. of d., Roy (13,406).

H. C.—Col. BRIDGFORD, C.B., Kinnersley, Hereford, **Daisy**, 1 1 w., 1 d.; s., Ardcaru (16,576); d., Lena; s. of d., Byron (13,656)

C.—E. W. CADDICK, Caradoc, Ross, **Caradoc Jewess**, 1 y., 1 6 d.; s., Blagdon (16,548); d., Caradoc Jewel; s. of d., President (14

SUSSEX.

CLASS 51.—Sussex Bull, calved in 1892 or 1893. [3 entries]

I. (£15.)—EARL OF DERBY, Birtlev, Witley, Surrey, **Proud** (1249), 4 y., 4 m., 1 w., 1 d.; s., Dog Daisy (1112); d., Pride Family 2nd (2469); s. of d., Young Hartley (444).

II. (£10.)—EARL WINTERTON, Shillinglee Park, Petworth, (1343), 3 y., 2 m., 1 w., 2 d., bred by J. S. Hodgson, Lythe Hill, H s., Dog Daisy (1112); d., Laura 7th (3268); s. of d., Lord Oxford (4

I. (£5.)*—**L. HUTH**, Possingworth Manor, Waldron, Sussex, **Fitzgerald** 1, 3 y., 7 m., 1 w., 5 d.; s., Fitzgerald 8th (1204); d., Virgin 22nd 7); s. of d., Fitzgerald (498).

CLASS 52.—Sussex Bull, calved in 1894. [5 entries.]

(£15.)—**C. J. LUCAS**, Warnham Court, Horsham, **Oxeye 3rd**, 2 y., 3 w., 2 d., bred by the late C. T. Lucas; s., Lord Oxeye (954); d., acer 3rd (4202); s. of d., Drungewick 2nd (498).

(£10.)—**W. S. FORSTER**, Gore Court, Maidstone, **Geoffrey** (1375), 4 m., 4 d.; s., Claude (1177); d., Gipsy Maid 3rd (5040); s. of d., i (483).

I. (£5.)*—**P. F. R. SAILLARD**, Buchan Hill, Crawley, Sussex, **Saracen** (1445), 2 y., 1 m., 2 w., 3 d.; s., Silversmith 2nd (1115); d., Cowslip 1st 1); s. of d., Bedlam 3rd (660).

C.—**EARL OF DERBY**, Birtley, Witley, Surrey, **Lord George Napier** 2), 2 y., 3 w.; s., Gladiator (1171); d., Lady Napier 2nd (5185); s. of d., r (1149).

—**L. HUTH**, Possingworth Manor, Waldron, Sussex, **Fitzgerald 10th**, 10 m., 4 w.; s., Fitzgerald 8th (1204); d., Tilly 9th (4444); s. of d., sian (626).

CLASS 53.—Sussex Bull, calved in 1895. [11 entries.]

(£15.)—**EARL OF DERBY**, Birtley, Witley, Surrey, **Bellman** (1412), 4 m., 3 w., 4 d.; s., Lord Oxeye of Wantley (1070); d., Broad Belle 3); s. of d., Buttermann (889).

(£10.)—**W. WOOD, jun.**, Hassocks, Sussex, **Pilgrim**, 11 m.; s., lee 2nd (1346); d., Young Mayflower (6113); s. of d., Dennett's (1018).

I. (£3.)—**P. F. R. SAILLARD**, Buchan Hill, Crawley, Sussex, **Spirit 2nd** 7), 1 y., 2 m., 3 w., 3 d.; s., Rochester (1114); d., Duchess Fern; s. of d., ing Duke (1333).

. & H. C.—**P. F. R. SAILLARD**, **Saracen 3rd** (1446), 1 y., 2 m., 3 d.; silversmith 2nd (1115); d., Cowslip (3951); s. of d., Bedlam 3rd (660).

. C.—**A. AGATE**, Grandford House, Horsham, **Prince John of Horn**, 1 y., 4 m., 2 w., 4 d.; s., Prince John (1261); d., Gentle 10th (4415); d., Nobleman (707):—**W. BELDAM**, Lyminster, Arundel, **Abbot 2nd**, 4 m., 1 w., 5 d.; s., The Abbott (1357); d., Eleanor (5298); s. of d., ght of Woodmancote (962):—**W. S. FORSTER**, Gore Court, Maidstone, **time** (1416), 1 y., 2 m., 3 w., 2 d.; s., Claude (1177); d., Butterfly 2nd 2); s. of d., Lord Fitzgerald (702):—**L. HUTH**, Possingworth Manor, iron, Sussex, 10 m., 1 w., 6 d.; s., Fitzgerald 12th; d., Virgin 20th 1); s. of d., Lord Beckley 6th (700):—**C. J. LUCAS**, Warnham Court, ham, **Eau de Vie 2nd**, 1 y., 3 m., 2 w., 2 d., bred by the late C. T. s; s., Lord Oxeye (954); d., Brandy 6th (3918); s. of d., Hadlow 3rd):—**EARL WINTERTON**, Shillinglee Park, Petworth, **Shakespeare**, 1 y., 2 w., 3 d.; s., Shylock (1343); d., Sempstress 4th (6093); s. of d., m (1043):—and **F. WARDE**, Aldon, Addington, West Malling, Kent, e of Aldon, 1 y., 2 m., 2 w., 5 d.; s., Dog Rose (1036); d., Aldon cell (6047); s. of d., King Alfred (340).

* Specially recommended.

CLASS 54.—Sussex Cow, in-Milk or in-Calf, calved before 1893.

[6 entries.]

I. (£15).—W. S. FORSTER, Gore Court, Maidstone, **Flo** (5879), 4 y., 4 m., 3 w., 5 d.; s., Gondolier (1001); d., Wadhurst Marygold (5050); s. of d., Lord Charles.

II. (£10).—F. WARDE, Aldon, Addington, West Malling, **Aldon Prebble C** (6057), 3 y., 11 m., 1 w., 2 d.; s., Redhill Golddust (927); d., Prebble C 1st (3320); s. of d., Steyning (309).

III. (£3).—W. S. FORSTER, **Careless E 7th** (5865), 6 y., 1 m., 3 w., 5 d., bred by Major Kirkpatrick, Horton Park, Hythe; s., Redhill Golddust (927); d., Careless E 5th (3661); s. of d., Napoleon 2nd (353).

R. & H. C.—EARL OF DERBY, Birtley, Witley, Surrey, **Honey Lass** (5851), 4 y., 4 m., 2 w., 3 d.; s., Lord Oxeve (954); d., Honey 3rd (3753); s. of d., Percy (712).

H. C.—L. HUTH, Possingworth Manor, Waldron, Sussex, **Gentle 11th** (5130), 7 y., 1 m., 2 w., 2 d.; s., Lord Beckley 6th (700); d., Gentle 9th (3731); s. of d., Sir William (520).

C.—C. J. LUCAS, Warnham Court, Horsham, **Verity 2nd**, 6 y., 8 m., 2 w., 3 d., bred by the late C. T. Lucas; s., Golden Horn (754); d., Veritas (3852); s. of d., Goldston (600).

CLASS 55.—Sussex Heifer, in-Milk or in-Calf, calved in 1893.

[3 entries.]

I. (£15).—G. WARDE, Tutsham, West Farleigh, Maidstone, **Dulcimer 3rd** (6365), 2 y., 11 m., 3 w., 4 d.; s., Dog Rose (1086); d., Dulcimer (6066); s. of d., Hadlow 3rd (824).

II. (£10).—W. S. FORSTER, Gore Court, Maidstone, **Bernina** (6203), 2 y., 10 m., 6 d.; s., Gondolier (1001); d., Stately (3832); s. of d., Lord Beaconsfield (459).

III. (£3).*—EARL OF DERBY, Birtley, Witley, Surrey, **Novice** (6183), 2 y., 11 m., 1 d.; s., Gladiator (1171); d., Noblesse (3078); s. of d., Drungewick (456).

CLASS 56.—Sussex Heifer, calved in 1894. [6 entries.]

I. (£10).—F. WARDE, Aldon, Addington, West Malling, Kent, **Aldon Butterfly 2nd** (6669), 2 y., 3 m., 2 w.; s., Dog Rose (1036); d., Butterfly 12th (4354); s. of d., Buffer (663).

II. (£5).—EARL OF DERBY, Birtley, Witley, Surrey, **Carnation** (6494), 2 y., 2 w., 4 d.; s., Gladiator (1171); d., Cuckoo (5462); s. of d., Frank (997).

III. (£2).—W. BELDAM, Lyminster, Arundel, **Lyminster Maid**, 1 y., 11 m., 3 d.; s., The Abbott (1357); d., Alwyn Maid (5304); s. of d., Oxheart (842).

R. & H. C.—Major BEST, Park House, Boxley, Maidstone, **Flora** (6474), 2 y., 4 m., 4 d.; s., Marechal Niel (1180); d., Grandiflora (4627); s. of d., Frankfort 1st (811).

H. C.—W. S. FORSTER, Gore Court, Maidstone, **Patience** (6517), 2 y., 2 m., 2 w., 3 d.; s., Claude (1177); d., Pretty Maid 6th (3563); s. of d., Honest Boy (544);—and P. F. R. SAILLARD, Buchan Hill, Crawley, Sussex,

* Specially recommended.

Wind 3rd (6646), 1 y., 11 m., 2 w., 3 d.; s., Silversmith 2nd (1115); d., Wind (4830); s. of d., Statesman (1022).

CLASS 57.—Sussex Heifer, calved in 1895. [10 entries.]

I. (£7.)—P. F. R. SAILLARD, Buchan Hill, Crawley, Sussex, **Maud** (6928), 1 y., 2 m., 2 w., 3 d.; s., Silversmith 2nd (1115); d., Cherry Tart (5662); s. of d., Saracen (1032).

II. (£5.)—C. J. LUCAS, Warnham Court, Horsham, **Toque**, 1 y., 4 m., 1 w., 6 d., bred by the late C. T. Lucas; s., Prince John (1261); d., Bonette 13th (5501); s. of d., Nobility (838).

III. (£2.)—EARL OF DERBY, Birtley, Witley, Surrey, **Honey Royal** (6774), 1 y., 4 m., 3 w., 1 d.; s., Proud Prince (1249); d., Honey Lass (5851); s. of d., Lord Oxeye (954).

R. & H. C.—G. WARDE, Tutsham, West Farleigh, near Maidstone, **Society Girl**, 1 y., 2 m., 5 d.; s., Prince John (1261); d., Columbine 6th (4410); s. of d., Oxford Duke (708).

H. C.—Major BEST, Park House, Boxley, Maidstone, **Boxley Acorn**, y., 3 m., 1 w.; s., Marechal Niel (1180); d., Acorn:—EARL OF DERBY, **Berry Bright** (6769), 1 y., 2 m., 2 w., 3 d.; s., Jubilee 2nd (1346); d., Berry 12th (4835); s. of d., Sir John (851):—W. S. FORSTER, Gore Court, Maidstone, **Rosebud 3rd** (6793), 1 y., 3 m., 5 d.; s., Gondolier (1001); d., Rosebud 1st (3825); s. of d., Frankenstein 2nd (328): EARL WINTERTON, Billinglee Park, Petworth, **Sweet Pea 2nd**, 1 y., 3 d.; s., Shyllock (1343); s., Sweet Pea (5315); s. of d., Gold (815):—G. WARDE, Tutsham Lady, y., 4 m., 2 w.; s., Prince John (1261); d., Noble Lady 5th (4419); s. of d., Nobleman (707):—and W. WOOD, jun., Hassocks, Sussex, **Woodmancote Lass 3rd**, 1 y., 3 m., 2 w., 5 d.; s., Fen Goldsmith (1212); d., Woodmancote Lass 2nd (6112); s. of d., Don John (1029).

JERSEY.

CLASS 58.—Jersey Bull, calved in 1892 or 1893. [6 entries.]

I. (£15.)—Mrs. C. MCINTOSH, Havering Park, Romford, Essex, dark grey, **Reaper**, 3 y., 11 m., 2 w., 5 d., bred by J. T. Michel, Jersey; s., Radical (1470); d., Maud (3396); s. of d., Beau Gustave (865).

II. (£10.)—J. F. HALL, Chilcote Manor Farm, Wells, Somerset, dark brown, **Marquis**, 3 y., 49 w., 4 d., bred by J. B. Cole, Sunnysbank, Neymouth; s., Duke of Abercorn 3rd (4074); d., Madge (vol. v. p. 504); s. of d., Prince Welcome (1936).

III. (£5.)—Sir G. GREENALL, Bart., Walton Hall, Warrington, brown, **Lay Lord** (1943, J.H.B.), 3 y., 4 m., 3 w., 6 d., bred by C. Simon, St. John's, Jersey; s., Wonder Lad (1390, J.H.B.); s. of d., Polite Carlo (1418, J.H.B.).

R.—Mrs. STARKIE, Mitchells, Saffron Walden, Essex, whole, **Gronfille's Lad**, 3 y., 3 w., 5 d.; s., Hillside Lad (3369); d., Gronfille; s. of d., Grouville's Champion (3346).

CLASS 59.—Jersey Bull, calved in 1894. [20 entries.]

I. (£15.)—E. MATHEWS, Chequers Mead, Potters Bar, dark fawn, **Malta**, 1 y., 7 m., 3 w.; s., Noirmant's Boy (4646); d., Orange Flower (vol. vi. p. 160); s. of d., Scarsdale Dundee (3782).

II. (£10).—Mrs. C. McINTOSH, Havering Park, Romford, Essex, fawn, **Mont Pellier** (Reg. No. 12, E.J.H.B.), 2 y., 1 m., 3 w., 5 d., bred by J. Pallot, Jersey; s., **What Wanted** (1259); d., **Duchess**; s. of d., **Sir Richard**.

III. (£5).—Sir G. GREENALL, Bart., Walton Hall, Warrington, brown, **Golden Baron** (2067, I.H.B.), 2 y., 4 m., 4 w., bred by T. Mourant, Trinity, Jersey; s., **Golden Pink** (1419, I.H.B.); d., **Queen Lass** (1179, I.H.B.).

R. & H. C.—J. BRUTTON, 7, Princes Street, Yeovil, dark grey, **Golden Lad**, 2 y., 1 m., 2 w., 3 d.; s., **Useful** (4730); d., **Golden Lass 5th**; s. of d., **Vulcan** (3906).

H. C.—S. BAXENDALE, Bonningtons, Ware, whole, **Baal** (93), 1 y., 9 m., 2 w., 4 d.; s., **Rechab 58th** (4681); d., **Balm 2nd** (168, vol. vi. p. 23); s. of d., **Nelson** (3564):—W. Mc. K. BRADLEY, Leylands, Meopham, Kent, whole, **Prince of Beresford**, 2 y., 2 m., 2 w., 5 d., bred by C. Mourant, St. Saviour's, Jersey; s., **Gamboge Lad** (1798 I.H.B.); d., **Fancy** (423, I.H.B.); s. of d., **Grey** (1094):—A. E. McMULLEN, Vale House, Hertford, dark fawn, **Duke**, 1 y., 5 m., 2 w., 6 d.; s., **Marquis** (4931, E.J.H.B.); d., **Valentine 10th** (vol. vi. p. 610); s. of d., **Promise** (2819, E.J.H.B.):—and Mrs. A. PERKINS, Oakdene, Holmwood, Surrey, whole brown, **Fame's Duke**, 2 y., 3 m., bred by P. Labey, Grouville, Jersey; s., **Duke of Carteret** (J.H.B., 1790); d., **Fame 8th** (J.H.B., 3421).

C.—L. P. FOWLER, Little Bushey Farm, Herts, **Ruddigore**, 1 y., 9 m., 1 w., bred by J. Falle, St. Martin's, Jersey; s., **Lord Smart** (1684); d., **Victoria 3rd** (4781):—and Col. W. A. HANKEY, Beaulieu, near Hastings, whole, **Golden Spur**, 2 y., 2 m., 2 w., bred by J. G. Le Conteur, St. John's, Jersey; s., **Golden Lad** (1242, I.H.B.); d., **Bonny Lass** (4577); s. of d., **Sapeur** (1358).

CLASS 60.—Jersey Bull, calved in 1895. [36 entries.]

I. (£15).—J. R. CORBETT, More Place, Betchworth, Surrey, fawn, **Harry 4th**, 1 y., 1 m., 1 w.; s., **Franciscan**; d., **Harebell A.**; s. of d., **Reti 2nd**.

II. (£10).—LORD ROTHSCHILD, Tring Park, Tring, Herts, silver grey, **Planet**, 1 y., 1 m., 2 w., 2 d.; s., **Spot's Lad** (4389); d., **Pontorson 2nd** (vol. v. p. 596); s. of d., **Pandora's Boy** (3619).

III. (£3).—W. BARRON, Taplow House, Bucks, grey, **Lord Dandy**, 10 m., 5 d.; s., **Lord of the Isles** (4612); d., **Dandelion** (Reg. ix. p. 11); s. of d., **Lily's Bud** (3469).

R. & H. C.—LORD ROTHSCHILD, fawn, **Tulip's Lad**, 1 y., 2 w., 4 d.; s., **Songster** (4710); d., **Tulip 3rd** (vol. vi. p. 381); s. of d., **Spot's Lad** (4389).

H. C.—S. BAXENDALE, Bonningtons, Ware, whole, **Bildad** (106), 1 y., 1 m., 2 d.; s., **Tim** (74, vol. vi. p. 591); d., **Bramble 3rd** (198, vol. vi. p. 68); s. of d., **Jonathan 39th** (4201):—H. J. CORNISH, Thornford, Sherborne, Dorset, dark brown, **Racer**, 1 y., 4 m., 1 w., 3 d., bred by N. Gorvel, St. Helier's, Jersey; s., **Golden Hero** (1833, J.H.B.); d., **La Fountain's Mabel** (6910, J.H.B.):—J. R. CORBETT, fawn, **Starling**, 11 m., 2 w.; s., **Little Goldie**; d., **Stargazer C.**; s. of d., **Franciscan**:—Sir G. GREENALL, Bart., Walton Hall, Warrington, brown, **Golden Glory**, 1 y., 3 m., 2 w., 1 d., bred by T. Mourant, Trinity, Jersey; s., **Granny's Golden King** (1867, J.H.B.); d., **Queen Lass** (1179, J.H.B.):—G. C. KNIGHT, Baldhorns Park, Ruspur, Sussex, brown, **Rufus**, 1 y., 2 w., 4 d.; s., **Norwaktus** (Reg. ix. p. 65); d., **Radna**; s. of d., **William Tell** (4447):—F. MATHEWS, Chequers Mead, Potters Bar, grey, **Golden Star**, 1 y., 2 m., 2 w., 6 d., bred by F. Vasselin, St. John's, Jersey; s., **Golden Hero** (4857); d., **Issue**; s. of d., **Distinction's Pride**.

(4060):—A. E. McMULLEN, Vale House, Hertford, dark grey, **La Chasse Baron**, 1 y., 1 m., 4 w., bred by P. Le Brocq, Jersey; s., **La Chasse Prince** (1927, J.H.B.); d., **Lady of Avenel** (6174, F.S.):—Mrs. C. McINTOSH, Havering Park, Romford, Essex, grey, **Lucifer**, 9 m., 3 w., 3 d.; s., **Morning Star** (E.J.H.B.); d., **Match Box 2nd** (5317, J.H.B.); s. of d., **Fern King** (1558, J.H.B.):—and Sir J. BLYTH, Bart., Blythwood, Stansted, Essex, fawn, **Distinction's Omega**, 1 y., 4 m., 6 d.; s., **Distinction's Champion**; d., **Distinction's Alpha**; s. of d., **Distinction's Pride** (4060).

C.—Capt. Hon. T. S. BRAND, R.N., Glynde, Lewes, Sussex, whole, **Nero**, 11 m., 1 w.; s., **Correze**; d., **Dairy Lass 2nd**; s. of d., **Sambo** (2003):—Sir J. GREENALL, Bart., fawn, **Perry Farm Golden Mine**, 1 y., 1 m., 3 d., bred by J. A. Desreux, St. Mary's, Jersey; s., **Golden Mine** (1979, J.H.B.); d., **Trial's Lassie** (4984, J.H.B.):—Col. W. A. HANKEY, Beaulieu, near Hastings, whole, **Prince Grouville**, 11 m., 3 w., 1 d.; s., **Grouville's Dairyman** (4153); d., **Young Queen 4th**; s. of d., **Biron** (1375, J.H.B.):—C. E. KEYSER, Aldermaston Court, Reading, light grey, **Columbus 3rd**, 10 m., 1 w., 2 d., bred by C. D. E. Fortumer, Stanmore, Middlesex; s., **Columbus 2nd** (4036); d., **Belinda**; s. of d., **Berkeley 2nd** (2246):—Col. T. B. SHAW HELLIER, Womburne, Wodehouse, Wolverhampton, whole, **Major**, 1 y., 4 m., 3 w., 1 d., bred by John Arthur, St. Mary's, Jersey; s., **Golden Hero** (4857); d., **Clementine 2nd** (3087); s. of d., **Pollux** (I.H.B., 471):—F. FREEMAN THOMAS, Ratton, Willingdon, Sussex, dark grey, **Transvaal**, 1 y., 1 m., 1 w., 4 d.; s., **Wigton Boy**; d., **Elegant**; s. of d., **Lord Arundel** (2619):—and F. FREEMAN THOMAS, dark fawn, **Butter Tooth**, 1 m., 2 w.; s., **Butterfly** (4006); d., **Harebell B.**; s. of d., **Martin's Duke** (3523).

Special Prizes, given by the English Jersey Cattle Society, for the Best Jersey Bull, under 2 years old, eligible for the English Jersey Cattle Society's Herd Book, exhibited in Class 59 or 60, descended through the sire or dam from a cow that has won a prize or certificate of merit in the English Jersey Cattle Society's Butter Tests. [24 entries.]

I. (£5).—J. R. CORBETT, More Place, Betchworth, Surrey, fawn, **Starling**, 1 m., 2 w.; s., **Little Goldie**; d., **Stargazer C.**; s. of d., **Franciscan**.

II. (£3).—S. BAXENDALE, Bonningtons, Ware, whole, **Baal** (93), 1 y., 1 m., 2 w., 4 d.; s., **Rechab 58th** (4681); d., **Balm 2nd** (168, vol. vi. p. 23); s. of d., **Nelson** (3564).

III. (£2).—Sir J. BLYTH, Bart., Blythwood, Stansted, Essex, fawn, **Distinction's Omega**, 1 y., 4 m., 6 d.; s., **Distinction's Champion**; d., **Distinction's Alpha**; s. of d., **Distinction's Pride** (4060).

R.—H. J. CORNISH, Thornford, Sherborne, Dorset, dark brown, **Racer**, 1 y., 4 m., 1 w., 3 d., bred by N. Gorvel, St. Helier's, Jersey; s., **Golden Hero** (1833, J.H.B.); d., **La Fountain's Mabel** (6910, J.H.B.).

C.—Capt. Hon. T. S. BRAND, R.N., Glynde, Lewes, Sussex, whole, **Nero**, 1 m., 1 w.; s., **Correze**; d., **Dairy Lass 2nd**; s. of d., **Sambo** (2003).

CLASS 61.—*Jersey Cow, in-Milk or in-Calf, calved before 1893.*

[22 entries.]

I. (£15).—LORD ROTHSCHILD, Tring Park, Herts, cream fawn, white witch, **Spot** (E.J.H.B., vol. vi. p. 565), 10 y., 2 m., 1 w., bred by J. Le Moignan, St. John's, Jersey; s., **Sir Garnet** (J.H.B., 405); d., **Bremen** (J.H.B., 4063).

II. (£10).—Sir G. GREENALL, Bart., Walton Hall, Warrington, fawn, **Mabel 23rd** (3231, I.H.B.), 8 y., 3 m., 2 w., 3 d., bred by W. J. Labey, Grouville, Jersey; s., Everton King (390, I.H.B.); d., Mabel 13th (1125, I.H.B.).

III. (£3).—LORD ROTHSCHILD, brown grey, **Gipsy Queen 2nd** (J.H.B. 5052), 4 y., 3 m., 4 w., 1 d., bred by J. Falbe, St. Martin, Jersey; s., Golden Lad (E.J.H.B., 3324); d., Gipsy Queen (440).

R. & H. C.—Col. W. A. HANKEY, Beaulieu, near Hastings, whole, **St. Brelade's Lady**, 6 y., 9 d., bred by J. Robinson, St. Brelades, Jersey; s., Maufants Carlo (3572); d., Mrs. Denne (3526, I.H.B.).

H. C.—Sir J. BLYTH, Bart., Blythwood, Stansted, Essex, grey, **Princess Alice**, 8 y., 3 m., 1 w., bred by J. T. Michel, Jersey; s., Pollux (871, I.H.B.); d., Alice 4th (526, I.H.B.):—Sir G. GREENALL, Bart., brown, **Daisy of the Valley**, 6 y., 3 m., 1 w., 1 d., bred by J. C. Le Sueur, St. Saviour's, Jersey; s., Ct. Wolseley (928, I.H.B.); d., Beauty of Ogden (3563, I.H.B.):—J. F. HALL, Chilcote Manor Farm, Wells, Somerset, fawn and white, **Rowena 10th**, 9 y., 4 m.; s., Wrangler (3003); d., Rowena 4th (J.H.B.); s. of d., Erebus (1559):—J. F. HALL, grey and white, **Silver Bell 2nd**, 7 y., bred by—Sugden, Alvechurch; s., Prince Rullecourt (3678); d., Silver Bell (imported):—LORD ROTHSCHILD, brown, **Dairy's Golden**, 4 y., 6 m., 1 w., 1 d., bred by W. J. Labey; s., Golden Lad (E.J.H.B., 3324); d., Darkey; s. of d., Dairy Pride (J.J.H.B., 186):—and Mrs. STARKIE, Mitchells, Saffron, Walden, whole, **Granddaughter**, 5 y., 1 m., 2 w., 6 d., bred by E. G. de la Perelle, Jersey; s., Sir William 2nd (3810); d., Daughter (2912, P.S.C.); s. of d., Volunteer (2983).

C.—Sir J. BLYTH, Bart., grey, **Snowflake 4th**, 8 y., 2 d., bred by J. C. Le Sueur; s., Everton King (1565); d., Snowflake (714, I.H.B.):—and Mrs. C. MCINTOSH, Havering Park, Romford, Essex, grey, **Ville Au Bas Lady 4th**, 4 y., 2 d., bred by J. Perrier, Jersey; s., Wonder Lad (1390, J.H.B.); d., Ville Au Bas Lady (940, P.C.J.H.B.); s. of d., Royal Oak P. (286, H.C., J.H.B.).

CLASS 62.—Jersey Heifer, in-Milk or in-Calf, calved in 1893.

[14 entries.]

I. (£15).—Mrs. C. MCINTOSH, Havering Park, Romford, Essex, brown, **Golden Buttercup**, 3 y., 3 m., 2 w., 6 d., bred by W. Alexander, St. Mary's, Jersey; s., Golden Lad (1242); d., Snap Buttercup 2nd (3388, H.C., J.H.B.); s. of d., Duc de Chambord (580).

II. (£10).—Sir J. BLYTH, Bart., Blythwood, Stansted, Essex, fawn, **Bay Leaf**, 3 y., 2 w., 3 d., bred by E. Ballaine, Jersey; s., Skinner (I.H.B., 1620); d., Jeanne d'Arc 2nd (I.H.B., 2841).

III. (£3).—Sir G. GREENALL, Bart., Walton Hall, Warrington, fawn, **Golden Mona**, 3 y., 3 w.; s., Golden Lad (1242, J.H.B.); d., Mona 7th (3694, J.H.B.).

R.—A. E. McMULLEN, Vale House, Hertford, brown, **Bijou V.**, 2 y., 8 m., 5 d., bred by Francis Vasseliz, St. Mary's, Jersey; s., Gordon Roy (1518); d., Bijou III. (4877).

CLASS 63.—Jersey Heifer, calved in 1894. [29 entries.]

I. (£10).—A. S. MARSDEN SMEDLEY, Normanhurst, Matlock, whole, **Mignonne**, 2 y., 3 m., 1 w., 2 d., bred by T. Fas Hinault, Trinity, Jersey; s., l'asha (No. 1804); d., Belle Mignonne.

II. (£5).—**LORD ROTHSCHILD**, Tring Park, Tring, Herts, fawn, **Oxford affodil**, 1 y., 11 m., 1 w., 1 d.; s., Nunthorpe (4648); d., Oxford Buttercup ol. vi. p. 450); s. of d., Golden Lad (3324).

III. (£2).—**SIR G. GREENALL**, Bart., Walton Hall, Warrington, brown, **appy III**, 2 y., 2 m., 3 w., 2 d., bred by A. le Goubey, Jersey; s., Tudor 682, (I.H.B.); d., Happy (4608).

R. & H. C.—**MRS. A. PERKINS**, Oakdene, Holmwood, Surrey, whole fawn, **anny Fancy**, 2 y., 2 m., 3 w., 3 d.; s., Lord of the Sunny Isles (4243); , Golden Fancy; s. of d., Golden Nero (3325).

H. C.—**W. BARRON**, Taplow House, Bucks, fawn, **Lady Tidy 3rd**, 2 y., m., 1 w.; s., Lord of the Isles (4612); d., Lady Tidy (vol. v. p. 715); of d., Sir Joe (3799):—**FOWLER** and **DE LA PERRELLE**, Southampton, solid, **ulip**, 2 y., 4 m., 1 w., bred by T. Pantier, Jersey; s., Result (1667, H.B.); d., La Croix Rose II. (5021, J.H.B.):—**SIR G. GREENALL**, Bart., fawn, **aisy's Gem**, 2 y., 2 w.; s., Little Gem (1828, I.H.B.); d., Daisy of the alley:—and his fawn and white, **White Mona**, 2 y., 1 m., 1 d.; s., Golden id (1242, I.H.B.); d., Mona 5th (2619, I.H.B.):—and **LORD ROTHSCHILD**, **wn, Bangle**, 2 y., 2 m., 4 w., 1 d., bred by J. E. Baudains, St. Peter's, rsey; s., Skinner (1620); d., St. John's Twist (6798).

C.—**W. BARRON**, fawn, **Phyllis 2nd**, 2 y., 1 d.; s., Lord of the Isles 612); d., Phyllis (Reg. ix. p. 11); s. of d., Golden Prince:—**SIR J. BLYTH**, rt., Blythwood, Stansted, Essex, fawn, **Distinction's Brebis**, 1 y., 11 m.; Distinction's Pride (4060); d., Brebis 6th:—**T. D. DUTTON**, Springhall, wbridgeworth, Herts, brown, tongue and tail black, **Gladioli 3rd**, y., 4 m., 3 w., 4 d., bred by Frères Queree, Jersey; s., Simon (J.H.B., 46); s. of d., Gladioli (J.H.B., 4731):—and **A. GIBBS**, Tyntesfield, istol, broken, **Kitty's Surprise**, 2 y.; s., Golden Prince (4559); d., itty's Pet; s. of d., Kaiser's Prince (3420).

CLASS 64.—Jersey Heifer, calved in 1895. [41 entries.]

I. (£7).—**F. FREEMAN THOMAS**, Ratton, Willingdon, Sussex, fawn, **eath**, 10 m., 2 w., 5 d.; s., Butterfly (4006); d., Hilarity; s. of d., Cloth Gold.

II. (£5).—**LORD ROTHSCHILD**, Tring Park, Tring, Herts, fawn, **Remem- ance**, 10 m., 3 w., bred by Mrs. F. Lamy, St. Clement's, Jersey; s., lden Pride (1903, J.J.H.B.); d., Broadside Queen (2538, J.J.H.B.).

III. (£2).—**C. G. KNIGHT**, Baldhorns Park, Ruspur, Sussex, fawn, **ylas**, 8 m., 3 w., 5 d.; s., William Tell (4447); d., Aja; s. of d., Jacky 193).

R. & H. C.—**MRS. C. MCINTOSH**, Havering Park, Romford, Essex, fawn, **ve 2nd** (E.J.H.B.), 10 m., 3 w., 3 d.; s., Sir June (1917); d., Love H.B.); s. of d., Golden Lad (1242).

H. C.—**SIR G. GREENALL**, Bart., Walton Hall, Warrington, fawn, **Plum**, y., 1 m., 1 w., 6 d.; s., Gay Lord (1943, I.H.B.); d., Currant 4th (3560, I.B.):—**E. MATHEWS**, Chequers Mead, Potters Bar, fawn, **Noirmont's een**, 9 m., 1 d.; s., Noirmont's Boy (4646); d., Young Queen 4th ol. vi. p. 497); s. of d., Everton Lord (3258):—**MRS. A. PERKINS**, Oak ne, Holmwood, light fawn, **Valkyrie**, 1 y., 2 w., 4 d.; s., Harry Lynx 171); d., Valentine; s. of d., Angela's Lad (1307):—and **F. FREEMAN** omas, fawn broken, **Abutilow**, 10 m., 3 w., 5 d.; s., Butterfly (4006); Abbuna Jewel; s. of d., Lord Ratton (3488).

C.—**W. BARRON**, Taplow House, Bucks, fawn, **Phyllis 3rd**, 1 y., w., 3 d.; s., Lord of the Isles; d., Phyllis (Reg. ix. p. 11); s. of d.,

Golden Prince:—and his fawn, **Lady of the Lake 6th**, 11 m., 3 w., 1 d.; s., Dora's Champion; d., Lady of the Lake 5th; s. of d., Viola's Pride:—Sir J. BLYTH, Bart., Blythwood, Stansted, Essex, dark grey, **Hillside Snowflake**, 1 y., 2 m., 1 w., 5 d.; s., Hillside Lad (1163); d., Snowflake 4th; s. of d., Everton King (1565):—Capt. Hon. T. S. BRAND, R.N., Glynde, Lewes, Sussex, whole, **Nectar**, 10 m., 2 w., 3 d.; s., Correze; d., Joyful Girl; s. of d., Kaiser's Prince:—Mdme. de FAIRBE, Luton Hoo Park, **May Queen 2nd**, 11 m., 2 w., 5 d.; s., Plucky Lad; d., May Queen; s. of d., Rival King (4343):—M. MARCUS, High Trees, Redhill, Surrey, fawn, **Sunbeam 2nd**, 11 m., 1 w.; s., Little Goldie; d., Sunflower 5th; s. of d., Mourier King 2nd (3557):—A. E. McMULLEN, Vale House, Hertford, grey fawn, **Scotch Lassie 2nd**, 9 m.; s., Perryfarm Glory (4659); d., Scotch Lassie; s. of d., Lord Wolseley 3rd:—and for his rich dark fawn, **Black Bess 2nd**, 9 m., 13 d.; s., La Chasse Prince (1927, J.H.B.); d., Black Bess (F.S., 8192):—Mrs. C. MCINTOSH, fawn, **Zenobia 43rd** (E.J.H.B.), 9 m., 2 d.; s., Reaper (4984, E.J.H.B.); d., Zenobia 38th (vol. vi. p. 638); s. of d., Bounce (1768):—and for her brown, **Golden Buttercup 2nd** (E.J.H.B.), 11 m., 3 w., 4 d.; s., Multon (2028); d., Golden Buttercup (J.H.B.); s. of d., Golden Lad (1242):—T. TAYLOR, Harpendenbury, Redbourn, St. Albans, fawn, **Una**, bred by M. Rose, Oak Lea, Buckhurst Hill, Essex:—R. A. VANSITTART, North Cray Place, Foot's Cray, Kent, fawn, **Honoria**, 1 y., 1 m., 1 w.; s., Mariner; d., Signorina; s. of d., Royal Cicero:—and W. A. WIGRAM, Hersham House, Walton-on-Thames, fawn, **Heather**, 11 m., 3 w., 6 d.; s., Pickwick (4964); d., Heliotrope; s. of d., Harry (4580).

GUERNSEY.

CLASS 65.—*Guernsey Bull, calved in 1892 or 1893. [7 entries.]*

I. (£15).—Sir F. MONTEFIORE, Bart., Worth Park, Crawley, Sussex, fawn and white, **Signalman** (585), 4 y., 4 m., bred by C. Barfoot, Bishopstoke, Hants; s., Squire of Fig Tree (370); s. of d., Gentrice (561).

II. (£10).—W. A. GLYNN, Seagrove, Seaview, Isle of Wight, orange fawn and white, **Frolic 5th** (612, E.G.H.B.), 3 y., 1 m., 3 w.; s., The General (444, E.G.H.B.); d., Frisky (357, E.G.H.B.).

III. (£5).—EXPRESS DAIRY COMPANY, LIMITED, College Farm, Finchley, Middlesex, orange fawn and white, **Ambassador**, 3 y., 4 m., 3 w., 3 d.; bred by J. W. Martel, Castel, Guernsey; s., Meridian (735, R.G.A.S.); d., Hilda 2nd (2035, R.G.A.S.).

R. & V. H. C.—A. H. WINGFIELD, Ampthill, red and white, **Benefactor** (659, E.G.H.B., vol. ii.), 3 y., 4 m., 2 w., 5 d., bred by J. Bourgaïse, Gron, St. Saviour's, Guernsey; s., Willing Lad (752, P.S., R.G.H.S.); d., Benefactress 4th (381, P.S., R.G.H.S.).

CLASS 66.—*Guernsey Bull, calved in 1894. [12 entries.]*

I. (£15).—H. J. GIBBS, Milford, Salisbury, fawn, **Masher 4th** (931, R.G.A.S.), 2 y., 2 m., 1 d., bred by D. Gaudion, St. Sampson's, Guernsey; s., Masher (705, R.G.A.S.); d., Blanch Flower 4th (3569, R.G.A.S.).

II. (£10).—Dowager LADY HEATHCOTE, Beechwood, Totton, Hants, lemon and white, **Milo** (No. 808, vol. xii. E.G.C.S.), 1 y., 11 m., 2 w.; s., Signalman (No. 585, vol. ix. E.G.C.S.); d., Merry (No. 2244, vol. ix. E.G.C.S.).

III. (£5).—Sir F. A. MONTEFIORE, Bart., Worth Park, Crawley, fawn and white, **Sir Francis 3rd** (734), 2 y., 4 m., 1 w.; s., Francis 2nd (440); d., Constance (751).

R. & V. H. C.—W. H. FOWLER, Claremont, Taunton, red and white, **Claremont Silver Stream**, 2 y., bred by T. Manger, jun., Lestre, St. Andrew's, Guernsey; s., Squire of the Pouchey (837, P.S., R.G.H.B.); d., Nora lu Lestre 1st (3248, P.S., R.G.H.B.).

H. C.—W. A. GLYNN, Seagrove, Seaview, Isle of Wight, orange fawn and white, **Hopeful 7th**, 1 y., 8 m., 3 w., 3 d.; s., Moscow (R.G.A.S.); d., Amelia (1223, E.G.H.B.)—and C. MIDDLETON, Marton R.S.O., Yorkshire, fawn and white, **Primpo** (948, R.G.A.S., P.S.), 1 y., 9 m., 3 w., 3 d., bred by T. Le Page, Roque a Boeuf, Castel, Guernsey; s., Squire of the King's Mills 1st (838, R.G.A.S., P.S.); d., Doatta Galla 1st (1429, P.S., R.G.A.S.).

C.—J. D. T. PARSONS, jun., Ashurst Place, Langton, Tunbridge Wells, red and white, **Calypso's Pride** (661, E.G.H.B.), 2 y., 3 m., 1 w., 6 d., bred by Mrs. Parsons, Ashurst Place; s., Sir Bevy's (366, E.G.H.B.); d., Calypso (1504, E.G.H.B.); s. of d., Tango.

CLASS 67.—Guernsey Bull, calved in 1895. [14 entries.]

I. (£15).—Sir H. D. TICHBORNE, Bart., Tichborne Park, Alresford, Hants, fawn and white, **Sir Visto** (835), 1 y., 4 m., 4 w., bred by J. Windsor, Illocq Castel, Guernsey; s., Squire of Le Land (895, P.S., R.G.A.S.); d., lamboyant 5th (3599, P.S., R.G.A.S.).

II. (£10).—W. A. GLYNN, Seagrove, Seaview, Isle of Wight, orange fawn and white, **Hopeful 8th** (781, E.G.H.B.), 11 m., 3 w., 4 d.; s., Frolic 5th 12, E.G.H.B.); d., Favourite 15th.

III. (£3).—E. A. HAMBRO, Hayes, Kent, yellow and white, **Lord Hayes**, m., 2 w., 4 d.; s., Lord Westbury (628); d., Bon Espoir (2609).

R. & V. H. C.—W. H. FOWLER, Claremont, Taunton, fawn and white, **Claremont Scamp**, 1 y., 4 m., 1 w., 3 d., bred by T. Richard, Ramée arm, Guernsey; s., Masher (705, P.S., R.G.H.B.); d., Bessie 3rd.

H. C.—EXPRESS DAIRY COMPANY, LIMITED, College Farm, Finchley, Middlesex, fawn and white, **Doctor Jim**, 9 m., 2 w., 5 d.; s., Ambassador; d., Dairy teen 5th.—H. J. GIBBS, Milford, Salisbury, red and white, **Sea Breeze** 32, E.G.H.B.), 1 y., 1 w., 2 d.; s., Bonnie Bairn (387, E.G.H.B.); d., Salisbury Lotta (1442, E.G.H.B.); s. of d., Excelsior 8th (138, E.G.H.B.)—and J. H. HOWARD, Goldenhayes, Bartley, Totton, Hants, dull red and white, **Pumpeter**, 11 m., 3 w., 11 d.; s., Signalman (585, E.G.H.B.); d., Turquoise 2nd (1198); s. of d., Papageno (351).

C.—J. C. FORSTER, Clatford Mills, Andover, red and white, **Jingo**, 1 y., n., 1 w., 6 d., bred by Mrs. Faith, Andover; s., Jove (621, E.G.H.B.); d., Clatford Spot (1246, E.G.H.B.)—and W. H. FOWLER, pale red and white, **Richard of Taunton Dean**, 11 m., 3 w., 1 d., bred by A. Simon, Leschies, Guernsey; s., Royal Squire of L'Etinnerie (812, P.S., R.G.H.B.); Bijou de Louisville (1161, P.S., R.G.H.B.).

CLASS 68.—Guernsey Cow, in-Milk or in-Calf, calved before 1893. [14 entries.]

I. (£15).—W. H. FOWLER, Claremont, Taunton, fawn and little white, **Claremont Sweet Briar**, 6 y., 4 m., 3 w., 2 d., bred by T. Le Patourel, s Prevots, St. Saviour's, Guernsey; s., Master Tom (170, P.S., R.G.H.B.); Beauty of Les Prevots.

II. (£10).—W. H. FOWLER, fawn and white, **Claremont Sweet Lavender**, 5 y., 11 m., 6 d., bred by J. Le Pelley, jun., Les Gallienues, St. Andrew's, Guernsey; s., Maximus (595, P.S., R.G.H.B.); d., Bonnie Dundee 46, P.S., R.G.H.B.).

III. (£3).—J. STEPHENS, Grove House, Finchley, Middlesex, red and white, **Muriel 4th** (1984), 4 y., 7 m., 2 w., 1 d.; s., May Boy (346); d., Muriel (1132).

R. & V. H. C.—W. A. GLYNN, Seagrove, Seaview, Isle of Wight, orange fawn and white, **Favourite 11th**, 7 y., 9 m., 1 w., 5 d.; s., Hopeful; d., Favourite 6th.

H. C.—J. STEPHENS, fawn and white, **Camelia of Guernsey** (2103), 6 y., 1 m., 3 d., bred by H. Gaudion, St. Sampson, Guernsey; s., Lord Strangford 2nd (234, G.H.B.); d., Daisy.

C.—J. STEPHENS, orange fawn and white, **Muriel** (1132), 10 y., 8 m., 2 w., 1 d., bred by H. Abrahams, St. Peter's, Guernsey; s., Climax 14th; d., Whitey (1603, G.H.B.).

Special Prize, given by the English Guernsey Cattle Society, for the Best Pair of Guernsey Cows in Class 68. [4 entries.]

I. (£5).—W. H. FOWLER, Claremont, Taunton, fawn and white, **Claremont Sweet Lavender**, 5 y., 11 m., 6 d., bred by J. Le Pelley, jun., Les Gallienues, St. Andrew's, Guernsey; s., Maximus (595, P.S., R.G.H.B.); d., Bonnie Dundee (1346, P.S., R.G.H.B.):—and his fawn and little white, **Claremont Sweet Briar**, 6 y., 4 m., 3 w., 2 d., bred by T. Le Patourel, Les Prevots, St. Saviour's, Guernsey; s., Master Tom (170, P.S., R.G.H.B.); d., Beauty of Les Prevots.

R.—J. STEPHENS, Grove House, Finchley, Middlesex, fawn and white, **Camelia of Guernsey** (2103), 6 y., 1 m., 3 d., bred by H. Gaudion, St. Sampson, Guernsey; s., Lord Strangford 2nd (234, G.H.B.); d., Daisy:—and his orange fawn and white, **Muriel** (1132), 10 y., 8 m., 2 w., 1 d., bred by H. Abrahams, St. Peter's, Guernsey; s., Climax 14th; d., Whitey (1603, G.H.B.).

CLASS 69.—Guernsey Heifer, in-Milk or in-Calf, calved in 1893.
[17 entries.]

I. (£15).—Sir F. A. MONTEFIORE, Bart., Worth Park, Crawley, fawn and white, **Lady Jane of the Naftian**, 2 y., 7 m., 2 w.; s., Sir Francis (155); d., Lady Jane of the Naftian (599).

II. (£10).—W. A. GLYNN, Seagrove, Seaview, Isle of Wight, orange fawn and white, **Bella 4th** (2373), 2 y., 7 m., 3 w., 4 d.; s., The General; d., Bella.

III. (£3).—W. H. FOWLER, Claremont, Taunton, fawn and white, **Claremont Olive** (2916, E.G.H.B.), 3 y., 1 m., 1 w., bred by E. T. le Page, F. Taode, L'Epinel, Guernsey; s., Cogent (756, P.S., R.G.H.B.); d., Polly.

R. & V. H. C.—EXPRESS DAIRY COMPANY, LIMITED, College Farm, Finchley, Middlesex, fawn and white, **East Lynne 5th**, 2 y., 11 m., bred by G. Long, Marlborough, Wilts; s., Oriole (494); d., East Lynne (1527).

H. C.—W. H. FOWLER, fawn and white, **Claremont Hilda** (2908, E.G.H.B.), 3 y., 4 m., bred by H. Mace, Baillents, St. Andrew's, Guernsey; s., Pas Mal (542, P.S., R.G.H.B.); d., Dolly Rose (2004, G.H.B.):—Hon. Mrs. A. B. HAMILTON, Sheldons, Hook, Hants, fawn and little white, **Sweet Marjoram** (No. 2817, E.G.H.B.), 3 y., 3 m., 1 w., 5 d.; s., Jesse (No. 328, E.G.H.B.); d., Sweet Silage (No. 1458, E.G.H.B.); s. of d., Mercury (No. 197, E.G.H.B.):—and J. STEPHENS, Grove House, Finchley, Middlesex, red and white, **Muriel 5th** (2524), 2 y., 9 m., 6 d.; s., May Boy (346); d., Muriel (1132).

C.—P. H. FOWLER, Watford, Herts, lemon and white, **Sally Jane 8th** (355, P.S., R.G.A.S., H.B.), 3 y., 2 m., 2 w., 5 d., bred by T. Le Messurier, Guernsey; s., Domino (788, P.S.); d., Sally Jane 5th (2190, P.S.); s. of d., Inch (409, P.S.).

CLASS 70.—Guernsey Heifer, calved in 1894. [17 entries.]

I. (£10.)—A. H. WINGFIELD, Amptill, red and white, **Fair Queen** 63, E.G.H.B., vol. xii., 2 y., 4 m., bred by N. Quivipel L'Erie, St. Peter the Wood; s., Count Lavender.

II. (£5.)—W. A. GLYNN, Seagrove, Seaview, Isle of Wight, orange fawn and white, **Jessica 4th**, 1 y., 11 m., 2 w., 3 d.; s., Moscow (R.G.H.B.); d., Jessica (E.G.H.B.).

III. (£2.)—J. D. TOOGOOD PARSONS, jun., Ashurst Place, Langton, Tunbridge Wells, yellow and white, **Saffron Crocus 2nd** (2792, E.G.H.B.), 3 m., 1 d., bred by George Long, Ogbourne, Marlborough; s., Oriole 4, E.G.H.B.); d., Saffron Crocus (925, E.G.H.B.); s. of d., Telephone 5, E.G.H.B.).

IV. (£2.)—W. H. FOWLER, Claremont, Taunton, white and fawn, **Claremont Marian** (2913, E.G.H.B.), 2 y., 1 m., 2 w., 5 d., bred by J. W. R. Preil Castel, Guernsey; s., Lord Clyde (874, P.S., R.G.H.B.); d., Marian (3272, P.S., R.G.H.B.); s. of d., Gallaise 1st (306, F.S., R.G.H.B.).

V. (£2.)—W. H. FOWLER, fawn and white, **Claremont Gladys**, 1 y., 1 m., 1 w., 5 d., bred by W. Le Ruey, Les Prevots, Guernsey; s., Captain 1; d., Lucy:—E. A. HAMBRO, Hayes, Kent, yellow and white, **Hayes Rose**, 1 y., 5 m., 2 d.; s., Annatto (801, P.S.); d., Rose of the Ville (2789):—C. MIDDLETON, Marton, R.S.O., Yorkshire, fawn and white, **Rosalie 2nd**, 2 y., 2 m., bred by John Laine, Islet, St. Sampson's, Guernsey; s., Golden King (277); d., Rosalie:—and S. TOWER, Stanstead, Ware, Herts, fawn, **Forget-me-not 5th** (2670, E.G.H.B.), 2 y., 2 m., 2 w., 2 d.; s., Gentle (516, E.G.H.B.); d., Forget-me-not 2nd (2148, E.G.H.B.).

VI. (£2.)—FOWLER and DE LA PERRELLE, Southampton, red and white, **Bellower** (4797, G.H.B.), 2 y., 1 m., bred by A. Ralls, Guernsey; s., Rydall; Flora of the Friquet:—W. A. GLYNN, orange-red and white, **Nelly 3rd** (84, G.H.B.), 2 y., 2 m., 3 w., 6 d., bred by H. de Garia, Les Belles, St. Pierre's; s., Prince of L'Etienne; d., Nelly:—and E. A. HAMBRO, yellow and white, **Hayes Lily of Calais**, 1 y., 8 m., 1 d.; s., Mars (849, P.S.); d., Lily of Calais (2720).

CLASS 71.—Guernsey Heifer, calved in 1895. [28 entries.]

I. (£7.)—Sir F. A. MONTEFIORE, Bart., Worth Park, Crawley, fawn, **Lucy des Forgettes 3rd**, 1 y., 4 m., 1 w.; s., Sir Francis 2nd (410); d., Lucy des Forgettes (1372).

II. (£5.)—E. A. HAMBRO, Hayes, Kent, yellow and white, **Hayes Vesta**, 1 y., 1 m., 1 w., 5 d.; s., Lord Westbury (628); d., Vesta 44th (2582).

III. (£2.)—J. STEPHENS, Grove House, Finchley, Middlesex, pale red and white, **Camelia of Guernsey 2nd** (2886), 1 y., 2 m., 2 w., 6 d.; s., May 7 (346); d., Camelia of Guernsey (2103).

IV. (£2.)—J. C. FORSTER, Clatford Mills, Andover, red and white, **Clatford Spot 4th**, 1 y., 1 m., 3 w., 2 d.; s., Jove (611, E.G.H.B.); d., Clatford Spot 2nd (2112, E.G.H.B.).

H. C.—J. C. FORSTER, fawn and white, **Antona 5th**, 1 y., 1 m., 2 w., 4 d.; d., Antona (980, E.G.H.B.); s. of d., Jove (621, E.G.H.B.) :—H. J. GIBBS, Milford, Salisbury, fawn and white, **Vanity** (3203, E.G.H.B.), 1 y., 2 w., 2 d.; s., Nobleman (634, E.G.H.B.); d., Valise (2580, E.G.H.B.); s. of d., Bonnie Bairn (387, E.G.H.B.) :—E. A. HAMBRO, yellow and white, **Hayes Musette**, 11 m., 4 w.; s., Lord Cloud (298); d., Musette 3rd (2766) :—and his yellow and white, **Hayes Princess**, 1 y., 1 m., 1 w., 5 d.; s., Paramour (718); d., Princess (2826) :—J. H. HOWARD, Goldenhayes, Bartley, Totton, Hants, red, few white markings, **Frivolity**, 1 y., 2 m., 3 d.; s., Signalman (585, E.G.H.B.); d., Fickleness (1855, E.G.H.B.); s. of d., Sentinel (270, E.G.H.B.) :—Sir F. A. MONTEFIORE, fawn and white, **Rose of Capelles 2nd** (3164), 1 y., 1 m., 2 w., 3 d.; s., Batchelor 2nd (850, P.S., R.G.A.S.); d., Rose of Capelles (3163) :—Sir H. D. TICHBORNE, Bart., Tichborne Park, Alresford, Hants, red and white, **Elfine of the Vilette 3rd** (2948), 1 y., 1 m., 3 w., 4 d.; s., Guess (615); d., Elfine of the Vilette (2658) :—and his red and white, **Rosey 2nd** (4972, G.H.B.), 1 y., 4 m., 1 w., bred by W. Le Ruez, Les Prevosts, St. Saviour's; s., Royal Squire of L'Etiennerie; d., Rosey.

C.—H. J. GIBBS, fawn and white, **Lady Bird of Milford** (3053, E.G.H.B.), 1 y., 2 m.; s., Nobleman (634, E.G.H.B.); d., Lady Blanche (2190, E.G.H.B.); s. of d., Oriole (494, E.G.H.B.) :—W. A. GLYNN, Seagrove, Seaview, Isle of Wight, orange, fawn and white, **Favourite 20th** (2972), 11 m., 1 w.; s., Frolic 5th (612); d., Favourite 10th (1287) :—and Hon. Mrs. A. B. HAMILTON, Sheldons, Hook, Hants, fawn and white, **Lady Jean 2nd**, 1 y., 2 d.; s., Dog Star (463, E.G.H.B.); d., Lady Jean (1345, E.G.H.B.); s. of d., Baron Vauxbelets 2nd (126, E.G.H.B.).

Special Prize, given by the English Guernsey Cattle Society, for the Best Pair of Guernsey Heifers in Class 69, 70, or 71. [20 entries.]

I. (£5).—Sir F. A. MONTEFIORE, Bart., Worth Park, Crawley, fawn, **Lily of the Bridge** (3080), 3 y., 3 w., bred by F. Hamley, St. Sampson's, Guernsey; s., Surprise of the Capelles (281, G.H.B.); d., Lily of the Bridge :—and his fawn and white, **Lady Jane of the Naftian**, 2 y., 7 m., 2 w.; s., Sir Francis (155); d., Lady Jane of the Naftian (599).

R.—W. A. GLYNN, Seagrove, Seaview, Isle of Wight, orange red and white, **Nelly 3rd** (4784, G.H.B.), 2 y., 2 m., 3 w., 6 d., bred by H. de Garis, Les Belles, St. Saviour's; s., Prince of L'Etiennerie; d., Nelly :—and his orange fawn and white, **Jessica 4th**, 1 y., 11 m., 2 w., 3 d.; s., Moscow (R.G.H.B.); d., Jessica (E.G.H.B.).

Whole Class **V. H. C.**

BUTTER TEST PRIZES.

(Given by the English Guernsey Cattle Society.)

Cow or Heifer in the Guernsey Classes, eligible for the Guernsey Herd Book, yielding the largest quantity of Butter by the practical Test of the Separator and Churn. [7 entries.]

I. (Gold Medal and £3).—Sir F. A. MONTEFIORE, Bart., Worth Park, Crawley, fawn and white, **Marguerite des Fauxcennaires**, 8 y., 8 m., bred by T. Martin, Guernsey; s., Billy; d., Marguerite des Fauxcennaires (1966, G.H.B.).

II. (Silver Medal and £3).—J. STEPHENS, Grove House, Finchley, Middlesex, fawn and white, **Camelia of Guernsey** (2103), 6 y., 1 m., 3 d., bred

Gaudion, St. Sampson, Guernsey; s., Lord Strangford 2nd (234,); d., Daisy.

(Bronze Medal and £3.)—W. H. FOWLER, Claremont, Taunton, fawn & white, **Claremont Sweet Briar**, 6 y., 4 m., 3 w., 2 d., bred by Patourel, Les Prevots, St. Saviour's, Guernsey; s., Master Tom (170, G.H.B.); d., Beauty of Les Prevots.

ABERDEEN-ANGUS.

ISS 72.—*Aberdeen-Angus Bull, calved in 1893, 1894, or 1895.*

[5 entries.]

(7.)—W. B. GREENFIELD, Haynes Park, Bedford, black, **Black Prince** (11,464), 2 y., 2 m., 1 w., 3 d., bred by J. Stuart, Stonehurst, Sussex; s., Financier of Ballindalloch (8328); d., Princess B. of Try (9818); s. of d., Knight of Johnston (2192).

(£5.)—Col. W. N. TUFNELL, Langleys, Chelmsford, black, **Gozo**, 1 d.; s., Lord Monken (9341); d., Violet of South Ella (16,279); s., Ensign of Guisachan (6011).

(£2.)*—L. A. MACPHERSON, Wyrley Grove, Pelsall, Staffordshire, **Dictator of Haddo** (11,583), 2 y., 5 m., 2 w., 4 d., bred by the Earl of Aberdeen, Haddo House, Aberdeen; s., Field Marshal of Guisachan; d., Pride of Aberdeen 36th (9212); s. of d., Knight of the Legion

Lieut.-Col. M. H. LAMBERT, Widdrington, Northumberland, black, **Widdrington** (12,358), 1 y., 4 m., 3 w.; s., Lord Randolph of Melville; d., Clementina of Burnshangie (21,044); s. of d., Pilchard (7827).

3.—A. B. LODER, High Firs, Harpenden, Herts, black, **Martindale** (12,916), 2 y., 4 m., 2 d., bred by J. H. Bridges, Horley, Surrey; s., Empire; d., Mary Anderson (8211).

73.—*Aberdeen-Angus Cow, in-Milk or in-Calf, calved before 1893.* [5 entries.]

(7.)—C. W. SCHROETER, Tedfold, Billingshurst, Sussex, black, **Saucy** (12,916), 6 y., 5 m., 1 d.; s., President of Kinochtry (4166); d., Studley (12,916); s. of d., Icon (2158).

(£5.)—W. B. GREENFIELD, Haynes Park, Bedford, black, **Queen of Haynes** (20,624), 3 y., 5 m., 2 d.; s., Ethelbert of Glamis (8308); d., of Haynes (16,584); s. of d., King of Paris (6869).

(£2.)*—W. B. GREENFIELD, black, **Queen of Haynes 3rd** (19,329), 3 y., 1 m., 1 w., 6 d.; s., King of Paris (6869); d., Kilmeny 2nd (4780); s., Albany (1354).

—F. CRISP, J.P., New Southgate, black, **Harden**, 8 y., 3 m., bred by Wallis, Bradley Hall, Wylam-on-Tyne; s., Englishman (2076); d., of Bradley; s. of d., Challenger (1260).

ISS 74.—*Aberdeen-Angus Heifer, calved in 1893, 1894, or 1895.*

[12 entries.]

(£7.)—F. CRISP, J.P., White House, New Southgate, black, **Satrina** (12,916), 3 y., 2 m., bred by J. C. Cunningham, Toyers; s., Ajax of Khan; d., Sulina (8223); s. of d., Sansbro (2911).

* Specially recommended.

II. (£5.)—W. B. GREENFIELD, Haynes Park, Bedford, black, **Queen of Haynes 6th** (21,881), 2 y., 5 m., 1 w., 3 d.; s., Monarch 2nd of Advie (11,094); d., Queen of Beechwood (12,496); s. of d., Ewell (3718).

III. (£2.)—W. B. GREENFIELD, black, **Benefit 6th of Haynes** (21,875), 2 y., 5 m., 2 w., 3 d.; s., Monarch 2nd of Advie (11,094); d., Benefit 2nd (5016); s. of d., Challenger (1260).

R.—W. B. GREENFIELD, black, **Queen of Haynes 5th** (21,880), 2 y., 5 m., 2 w., 6 d.; s., Monarch 2nd of Advie (11,094); d., Queen of Haynes 2nd (18,018); s. of d., King of Paris (6869).

H. C.—L. A. MACPHERSON, Wyrley Grove, Pelsall, Staffordshire, black, **Pride of Wyrley**, 2 y., 4 m., 3 w.; s., Athenian (8932); d., Pride 6th of Phoincas (14,093); s. of d., Ixion (5431).—C. W. SCURROTER, Tedfold, Billingshurst, Sussex, black, **Pride of Tedfold** (23,443), 1 y., 5 m., 1 w.; s., Lord Randolph of Melville (8504); d., Pride of Mormond (21,052); s. of d., Pilchard (7827).—and Col. TURNELL, Langley, Chelmsford, black, **Mosssta**, 2 y., 3 m., 3 w.; s., Goldseeker (10,030); d., Black Beauty (14,303); s. of d., Erribol (4649).

C.—Lieut.-Col. M. H. LAMBERT, Widdrington, Northumberland, black, **Kindness 2nd of Widdrington** (23,142), 1 y., 3 m., 3 w., 6 d.; s., Baron Coffee (10,623); d., Katrine of Drummur (19,093); s. of d., Gamecock (2774).

KERRY.

CLASS 75.—Kerry Bull, calved in 1893, 1894, or 1895. [5 entries.]

I. (£7) and Special (£5 5s.)*—JAMES ROBINSON, The Firs, Hatton, Warwick, black, **Mickey Free**, 1 y., 1 m., 2 w., 6 d., bred by R. Barter, St. Ann's Hill, Co. Cork; s., Waterville Auctioneer (178); d., Aicme Clara.

II. (£5) and R. for Special.*—C. ADEANE, Brabraham Hall, Cambridge, black, **Blacksmith** (318), 1 y., 1 m., 3 d.; s., Babraham Beau (240); d., Black Martin (1993); s. of d., Blackamoor (246).

R. & V. H. C.—EXPRESS DAIRY COMPANY, LIMITED, College Farm, Finchley, black, **Faust**, 1 y., 3 m., 2 w., 5 d.; s., Denham Beau 2nd (131); d., Killarney.

H. C.—JAMES ROBINSON, black, **Fin MacCumhail**, 1 y., 3 m., 2 w., 2 d., bred by Lord de Visci, Abbeylux, Ireland; s., Cearnach (190); d. Lady Go Lightly (526).

CLASS 76.—Kerry Cow, in-Milk or in-Calf, calved before 1893. [4 entries.]

I. (£7.)—EXPRESS DAIRY COMPANY, LIMITED, College Farm, Finchley, Middlesex, black, **Eyvina 3rd** (379), 6 y., 10 m., 3 w., 1 d., bred by Pierce Mahony, Kilmona, Co. Kerry; s., O'Ruare (29); d., Eyvina 2nd (85); s. of d., Aberlow 1st.

II. (£5.)—EXPRESS DAIRY COMPANY, LIMITED, black, **Killarney**, 12 y.

CLASS 77.—Kerry Heifer, calved in 1893, 1894, or 1895. [4 entries.]

I. (£7.)—EXPRESS DAIRY COMPANY, LIMITED, College Farm, Finchley, Middlesex, black, **Bantry**, 2 y., 9 m.; s., Denham Beau (131); d., Donegal

* Given by the Kerry and Dexter Cattle Society, for the Best Animal in Class 75, 76, or 77, whose Sire and Dam were entered in the Herd Book.

II. (£5).—J. ROBERTSON, The Firs, Hatton, black, **Aicme Cheshire**, under 2 y.

R. & V. H. C.—C. ADEANE, Babraham Hall, Cambridge, black, **Bouquet**, y., 11 m., 1 w., 4 d.; s., St. Patrick; d., Bride (1511); s. of d., Mentore (90).

DEXTER KERRY.

CLASS 78.—*Dexter Kerry Bull, calved in 1893, 1894, or 1895*
[5 entries.]

L. (£7) and Special (£5 5s.)*—J. ROBERTSON, The Firs, Hatton, Warwick, black, **Blackberry**, 1 y., 8 m., 4 w., 1 d., bred by G. F. Roumieu, Willyrk, Farnham; s., Fascination (6); d., Lily (415).

II. (£5).—F. H. BAXENDALE, J.P., Framfield Place, Framfield, Uckfield, black, **Framfield Don**, 2 y., 6 m., 3 d.; s., Kidmore Paradox 2nd (59); Daphne (448).

R. & V. H. C.—H.R.H. THE PRINCE OF WALES, K.G., Sandringham, Norfolk, black, **Tommy Dodd** (2558), 3 y. (Herd Book, 183.)

E. C.—T. C. T. WARNER, M.P., Highams, Woodford Green, Essex, black, **My Boy**;—and his black, **Black Prince**, 1 y., 3 m., 4 w., 1 d.; s., Sham Lord Lisburn (93); d., Rouge et Noir (303).

CLASS 79.—*Dexter Kerry Cow, in-Milk or in-Calf, calved before 1893.*
[3 entries.]

L. (£7).—J. ROBERTSON, The Firs, Hatton, Warwick, black, **Pet**, 4 y. out (Herd Book, No. 632.)

II. (£5).—C. VAN. RAALTE, Aldenham Abbey, Watford, black, **Denham Triumph** (252), 8 y.

R. & V. H. C.—J. ROBERTSON, black, **Rosalind**, 4 y. about. (Herd Book, Ear Mark, 3387.)

CLASS 80.—*Dexter Kerry Heifer, calved in 1893, 1894, or 1895.*
[6 entries.]

L. (£7).—T. C. T. WARNER, M.P., Highams, Woodford Green, Essex, black, **Hussy**, 3 y., 6 d.

II. (£5) and R. for Special.*—F. H. BAXENDALE, J. P., Framfield Place, Framfield, Uckfield, red, **Garnet**, 1 y., 6 m., 3 w., 2 d.; s., Paradox 2nd (59); d., Daphne (448).

III. (£3).—J. ROBERTSON, The Firs, Hatton, Warwick, black, **Butterfly**, under 2 y. (Herd Book, Ear Mark, 3255.)

R. & V. H. C.—F. H. BAXENDALE, J.P., black, **Framfield Emerald**, about.

E. C.—J. ROBERTSON, black, **Lady Bird**, 2 y. about. (Herd Book, Ear Mark, 2921.)

* Given by the Kerry and Dexter Cattle Society, for the Best Animal in Classes 78, 79, or 80, whose Sire and Dam were entered in the Herd Book.

BUTTER TEST PRIZES.*

(Open to Cows of any Breed or Cross.)

[30 entries.]

(Animals entered in other Classes can also be entered in these Classes.)

CLASS 81.—*Cows under 900 lbs. live weight, yielding the largest quantity of Butter by the practical Test of the Separator and Churn, judged by the scale of points adopted by the English Jersey Cattle Society.*

I. (£10) and Bronze Medal.†—Dr. H. WATNEY, Buckhold, Pangbourne, Berks, fawn Jersey, **Lady of the Sunny Isles**, 4 y., 4 m., 1 w.; s., Just (3419); d., Lady of the Isles 3rd; s. of d., Grey of the West (1098).

II. (£8.)—Mrs. C. McINTOSH, Havering Park, Romford, Essex, brown Jersey, **Golden Buttercup**, 3 y., 3 m., 2 w., 6 d., bred by W. Alexander, St. Mary's, Jersey; s., Golden Lad (1242); d., Snap Buttercup 2nd (3388, H.C., J.H.B.); s. of d., Duc de Chambord (580).

III. (£2.)—Col. W. A. HANKEY, Beaulieu, Hastings, whole Jersey, **St. Brelade's Lady**, 6 y., 9 d., bred by J. Robinson, St. Brelades, Jersey; s., Maufants Carlo (3572); d., Mrs. Denne (3526, I.H.B.).

Certificates of Merit.—C. COMBE, Cobham Park, Surrey, dark fawn Jersey, **Brianne** (vol. vi. p. 42), 5 y., 1 w.; s., Samivel (3773); d., Benin (vol. vi. p. 42); s. of d., Leonidas (3461):—Mrs. E. E. STARKIE, Mitchells, Saffron Walden, whole Jersey, **Granddaughter**, 5 y., 1 m., 2 w., 6 d., bred by E. G. de la Perelle, Jersey; s., Sir William 2nd (3810); d., Daughter (2912, P.S.C.); s. of d., Volunteer (2983):—Dr. H. WATNEY, fawn Jersey, **Vesta 2nd**, 10 y., 11 m., 6 d., bred by W. H. Campion, Little Danny, Sussex; s., Goldfield (2480); d., Vesta (vol. iv. p. 654); s. of d., Lord Somers (507):—and S. BAXENDALE, Bonningtons, Ware, whole Jersey, **Myosotis** (147), 5 y., 2 m., 5 d.; s., Japhet 21 (3395); d., May 86 (vol. iv. p. 459); s. of d., Baron Hunsdon 15 (1338).

CLASS 82.—*Cows 900 lbs., live weight and over, yielding the largest quantity of Butter by the practical Test of the Separator and Churn, judged by the scale of points adopted by the English Jersey Cattle Society.*

I. (£10) and Gold Medal.†—LORD ROTHSCHILD, Tring Park, Tring, Herts, fawn and white Jersey, **Clemence 2nd**, 8 y., 3 m., 2 d., bred by F. Renault, St. Mary's, Jersey; s., Golden King (3323); d., Clemence (7253, J.J.H.B.).

II. (£8) and Silver Medal.†—Dr. H. WATNEY, Buckhold, Pangbourne, Berks, fawn Jersey, **Syphon**, 4 y., 6 m., 1 w., 1 d.; s., Lord Ronald (4247); d., Sherry (vol. vi. p. 549); s. of d., Thunderbolt.

III. (£2.)—E. CARTER, Puckpool House, near Ryde, fawn Jersey, **Finish**, 10 y., 3 m., 2 w., 3 d., bred by J. and M. Arnold, Westmeon, Petersfield; s., Lord of Carolina (1771); d., Frieda; s. of d., Five Hides (326).

Certificate of Merit.—E. CARTER, fawn Jersey, **Frivolity**, 6 y., 2 m., 2 w., 3 d.; s., Hamley (3349); d., Frieda; s. of d., Five Hides (326).

* Given by the English Jersey Cattle Society.

† Given for the three Jersey Cows competing in the test giving the greatest yields of Butter.

SHEEP.

LEICESTER.

CLASS 83.—*Leicester Shearling Ram.* [6 entries.]

- I. (£10.)—Mrs. PERRY-HERRICK, Beau Manor Park, Loughborough, 1 y., 2 w.
II. (£5.)—Mrs. PERRY-HERRICK, 1 y., 2 m., 2 w.
III. (£2.)—G. HARRISON, Gainford Hall, Darlington, 1 y., 2 m.
R.—T. YELLAND, Nanphysick, St. Mewan, St. Austell, 1 y., 2 m., 2 w.
H. C.—G. HARRISON, 1 y., 2 m.
3.—G. HARRISON, 1 y., 2 m.

CLASS 84.—*Pair of Leicester Ram Lambs, dropped in 1896.* [5 entries.]

- I. (£10.)—G. HARRISON, Gainford Hall, Darlington, 2 m., 2 w.
II. (£5.)—T. YELLAND, Nanphysick, St. Mewan, St. Austell, 2 m., 2 w.
3.—Mrs. PERRY-HERRICK, Beau Manor Park, near Loughborough, 2 m.

CLASS 85.—*Pen of Three Leicester Shearling Ewes.* [4 entries.]

- I. (£10.)—G. HARRISON, Gainford Hall, Darlington, 1 y., 2 m.
II. (£5.)—G. HARRISON, 1 y., 2 m.
3.—Mrs. PERRY-HERRICK, Beau Manor Park, Loughborough, 1 y., 2 w.
H. C.—Mrs. PERRY-HERRICK, 1 y., 2 m., 2 w.

COTSWOLD.

CLASS 86.—*Cotswold Shearling Ram.* [6 entries.]

- I. (£10.)—R. SWANWICK, R.A. College Farm, Cirencester, 1 y., 3 m., 2 w.
II. (£5.)—R. SWANWICK, 1 y., 3 m., 2 w.
III. (£2.)—T. R. HULBERT, North Cerney, Cirencester, 1 y., 4 m.
3.—R. CRADDOCK, Eastington, Northleach, Gloucester, 1 y., 3 m., 3 w.
3.—T. R. HULBERT, 1 y., 4 m.

CLASS 87.—*Pair of Cotswold Ram Lambs, dropped in 1896.* [6 entries.]

- I. (£10.)—F. CRADDOCK, Eastington, Northleach, Gloucester, 3 m., 3 w.
II. (£5.)—F. CRADDOCK, 3 m., 3 w.
III. (£2.)—H. AKERS, Black Bourton, Faringdon, 4 m., 1 w.
R. & H. C.—H. AKERS, 4 m., 2 w.

xxxvi *Prizes awarded to Devon Long-woolled and Southdown Sheep.*

CLASS 88.—*Pen of Three Cotswold Shearling Ewes.* [3 entries.]

I. (£10.)—F. CRADDOCK, Eastington, Northleach, Gloucester, 1 y., 3 m., 3 w.

II. (£5.)—T. R. HULBERT, North Cerney, Cirencester, 1 y., 4 m.

R. & C.—T. R. HULBERT, 1 y., 4 m.

DEVON LONG-WOOL.

CLASS 89.—*Devon Long-Wool Shearling Ram.* [12 entries.]

I. (£10.)—N. COOK, The Barton, Chevithorne, Tiverton, Devon, 1 y., 3 m., 3 w.

II. (£5.)—J. WHITE, Torweston, Williton, Somerset, 1 y., 3 m.

III. (£2.)—C. G. THORNE, Curdon, Williton, Somerset, 1 y., 3 m.

R. & V. H. C.—J. WHITE, 1 y., 3 m.

V. H. C.—N. COOK, 1 y., 3 m., 3 w.

C.—N. COOK, 1 y., 4 m.:—A. C. SKINNER, Pound Farm, Bishop's Lydeard, Somerset, about 1 y., 4 m.:—C. G. THORNE, 1 y., 3 m.:—and his 1 y., 3 m.:—and J. WHITE, 1 y., 3 m.

CLASS 90.—*Pair of Devon Long-Wool Ram Lambs, dropped in 1896.*
[9 entries.]

I. (£10.)—A. C. SKINNER, Pound Farm, Bishop's Lydeard, Somerset, 4 m. about.

II. (£5.)—N. COOK, Chevithorne, Tiverton, Devon, 4 m.

III. (£2.)—A. C. SKINNER, 4 m. about.

R. & H. C.—N. COOK, 3 m., 3 w.

H. C.—C. G. THORNE, Curdon, Williton, Somerset, 3 m.

CLASS 91.—*Pen of Three Devon Long-Wool Shearling Ewes.*
[3 entries.]

I. (£10.)—N. COOK, Chevithorne, Tiverton, Devon, 1 y., 3 m., 3 w.

II. (£5.)—N. COOK, 1 y., 3 m., 3 w.

III. (£2.)*—N. COOK, 1 y., 3 m., 3 w.

SOUTHDOWN.

CLASS 92.—*Southdown Shearling Ram.* [19 entries.]

I. (£10.)—Sir J. BLYTH, Bart., Blythwood, Stansted, Essex, 1 y., 3½ m.

II. (£5.)—Sir J. BLYTH, Bart., 1 y., 3½ m.

III. (£2.)—Sir W. THROCKMORTON, Bart., Buckland, Faringdon, Berks, 1 y., 3 m., 1 w.

R. & H. C.—E. ELLIS, Summersbury Hall, Shalford, Guildford, 1 y., 3 m.

* Specially recommended.

Prizes awarded to Hampshire Down Sheep. xxxvii

C.—H.R.H. THE PRINCE OF WALES, K.G., Sandringham, Norfolk, 3 m.:—and E. MATHEWS, Chequers Mead, Potters Bar, 1 y., 2 m., 2 w.

—EARL BATHURST, Cirencester Park, 1 y., 3 m., 2 w. about:—and G. ANE, Babraham Hall, Cambridge, 1 y., 3 m., 3 w.

CLASS 93.—Pair of Southdown Ram Lambs, dropped in 1896.
[12 entries.]

(£10.)—E. MATHEWS, Chequers Mead, Potters Bar, 2 m., 3 w. about.

(£5.)—E. ELLIS, Summersbury Hall, Shalford, Guilford, 3 m., 1 w.

L (£2.)—H.R.H. THE PRINCE OF WALES, K.G., Sandringham, Norfolk, 2 w.

& **H. C.**—EARL BATHURST, Cirencester Park, 3 m., 2 w. about.

—Rev. J. GORING, Wiston Park, Steyning, Sussex, 4 m., 2 w.

CLASS 94.—Pen of Three Southdown Shearling Ewes. [8 entries.]

(£10.)—Sir J. BLYTH, Bart., Blythwood, Stansted, Essex, 1 y., 3½ m.

(£5.)—E. ELLIS, Summersbury Hall, Shalford, Guildford, 1 y., 3 m.,

L (£2.)—Sir W. THROCKMORTON, Bart., Buckland, Faringdon, Berks, 3 m., 1 w.

& **H. C.**—H.R.H. THE PRINCE OF WALES, K.G., Sandringham, 1½ k, 1 y., 3 m.

—EARL BATHURST, Cirencester Park, 1 y., 3 m., 2 w.

HAMPSHIRE DOWN.

CLASS 95.—Hampshire Down Shearling Ram. [12 entries.]

(£10.)—A. DE MORNAY, Col d'Arbres, Wallingford, Col d'Arbres 1st, 1 y., 4 m., 1 w.

(£5.)—T. F. BUXTON, Waters Place Farm, Ware, Herts, 1 y., 3 m.,

L (£2.)—Prof. WRIGHTSON, College of Agriculture, Downton, Salisbury, 4 m.

& **H. C.**—Prof. WRIGHTSON, 1 y., 4 m.

C.—LORD ROTHSCHILD, Tring Park, Herts, 1 y., 4 m. about.

—T. F. BUXTON, 1 y., 4 m.:—and W. T. TWIDELL, Mays Farm, Crowmarsh, Wallingford, Berks, 1 y., 4 m., 3 w.

CLASS 96.—Pair of Hampshire Down Ram Lambs, dropped in 1896.
[15 entries.]

(£10.)—A. DE MORNAY, Col d'Arbres, Wallingford, 4 m., 1 w.

(£5.)—E. WHALLEY-TOOKER, Hinton Daubnay, Horndean, Hants,

L (£2.)—W. T. TWIDELL, Mays Farm, Crowmarsh, Wallingford, Berks, 3 w.

& **H. C.**—E. WHALLEY-TOOKER, 4 m.

xxxviii *Prizes awarded to Suffolk and Shropshire Sheep.*

H. C.—H. N. CARLISLE, Row End, near Dunstable, 4 m., 2 w.

C.—T. F. BUXTON, Waters Place Farm, Ware, Herts, 4 m.:—J. FLOWER, Chilmark, Salisbury, 4 m., 2 w.:—and LORD ROTHSCHILD, Tring Park, Herts, 4 m. about.

CLASS 97.—*Pen of Three Hampshire Down Shearling Ewes.*
[3 entries.]

I. (£10).—T. F. BUXTON, Waters Place Farm, Ware, Herts, 1 y., 4 m.

II. (£5).—LORD ROTHSCHILD, Tring Park, Herts, 1 y., 4 m.

R. & H. C.—J. FLOWER, Chilmark, Salisbury, 1 y., 4 m., 2 w.

SUFFOLK.

CLASS 98.—*Suffolk Shearling Ram.* [5 entries.]

I. (£10) and Gold Medal.*—EARL OF ELLESMERE, Stetchworth Park, Newmarket, 1 y., 3 m.

II. (£5).—J. SMITH, The Grange, Walton, Ipswich, Suffolk, 15 m.

III. (£2).†—A. PALEY, Ampton Hall, near Bury St. Edmunds, 1 y., 3 m. about.

R.—EARL OF ELLESMERE, 1 y., 3 m.

CLASS 99.—*Pair of Suffolk Ram Lambs, dropped in 1896.*
[3 entries.]

I. (£10).—EARL OF ELLESMERE, Stetchworth Park, Newmarket.

II. (£5).—ARTHUR PALEY, Ampton Hall, near Bury St. Edmunds, 3 m., 3 w.

III. (£2).†—J. SMITH, The Grange, Walton, Ipswich, Suffolk, 14 w., 4 d.

CLASS 100.—*Pen of Three Suffolk Shearling Ewes.* [2 entries.]

I. (£10) and R. for Gold Medal.*—J. SMITH, The Grange, Walton, Ipswich, Suffolk, 15 m.

R. & R. C.—EARL OF ELLESMERE, Stetchworth Park, Newmarket.

SHROPSHIRE.

CLASS 101.‡—*Shropshire Shearling Ram.* [34 entries.]

I. (£10).—M. BARRS, Odstone Hall, Atherstone, 1 y., 2 m., 2 w. about.

II. (£5).—J. BOWEN-JONES, Ensdon House, Montford Bridge, Shropshire, 1 y., 2 m., 3 w. about.

III. (£3).—A. E. MANSELL, Harrington Hall, Shifnal, 1 y., 3 m., 2 w.

IV. (£2).—W. F. INGE, Thorpe Hall, Tamworth, 15 m. about.

* Given by the Suffolk Sheep Society, for Best Exhibit in Class 98, 99, or 100, Gold Medal, value 10l.

† Specially recommended.

‡ The 3rd and 4th Prizes in Class 101 were given by the Shropshire Sheep Breeders' Association.

& V. H. C.—J. HARDING, Norton House, Shifnal, 1 y., 3 m., 3 w.

C.—A. S. BERRY, Pheasey Farm, Great Barr, Birmingham, 1 y., 2 m.
 t.—M. BARRS, 1 y., 2 m., 2 w. about:—A. E. MANSELL, 1 y., 3 m., 2 w.:
 i P. L. MILLS, Ruddington Hall, Nottingham, 1 y., 3 m. about.

—J. BOWEN-JONES, 1 y., 2 m., 3 w. about:—R. P. COOPER, Shenstone
 t, Lichfield, 1 y., 2 m., 3 w.:—G. L. FOSTER-HARTER, Puckrup Hall,
 esbury, 1 y., 3 m., 2 w. about:—and his 1 y., 2 m., 2 w. about:—
 ARDING, 1 y., 3 m., 2 w. about:—and W. F. INGE, 15 m. about.

CLASS 102.—Pair of Shropshire Ram Lambs, dropped in 1896.

[14 entries.]

(£10.)—A. E. MANSELL, Harrington Hall, Shifnal, 3 m., 2 w.

(£5.)—P. L. MILLS, Ruddington Hall, Nottingham, 3 m. about.

. (£2.)—P. A. MUNTZ, M.P., Dunsmore, Rugby, 2 m., 3 w.

& V. H. C.—W. F. INGE, Thorpe Hall, Tamworth, 3 m. about.

C.—R. P. COOPER, Shenston Court, 2 m., 3 w., 4 d.:—and E. NOCK,
 ton House, Shifnal, Salop, 3 m., 1 w.

—G. L. FOSTER-HARTER, Puckrup Hall, Tewkesbury, 4 m. about:
 his 4 m. about:—and A. TANNER, Shrawardine, Shrewsbury, 2 m., 3 w.

103.*—Pen of Three Shropshire Shearling Ewes. [13 entries.]

(£10.)—W. F. INGE, Thorpe Hall, Tamworth, 15 m. about.

(£5.)—M. BARRS, Odstone Hall, Atherstone, 1 y., 2 m., 1 w. about.

(£3.)—J. BOWEN-JONES, Ensdon House, Montford Bridge, Shropshire,
 m., 3 w. about.

(£2.)—R. P. COOPER, Shenstone Court, Lichfield, 1 y., 2 m., 3 w., 5 d.

& V. H. C.—HOWARD P. RYLAND, Moxhull Park, Erdington, Birming-
 . y., 2 m. about.

C.—P. L. MILLS, Ruddington Hall, Nottingham, 1 y., 3 m. about:—
 MUNTZ, M.P., Dunsmore, Rugby, 1 y., 2 m., 2 w. about:—and
 NNER, Shrawardine, Shrewsbury, 1 y., 2 m., 4 w.

—T. FENN, Stonebrook House, Ludlow, 1 y., 2 m., 1 w.:—and E. NOCK,
 on House, Shifnal, Salop, 1 y., 3 m., 1 w. about.

OXFORD DOWN.

CLASS 104.—Oxford Down Shearling Ram. [6 entries.]

(£10.)—A. BRASSEY, M.P., Heythrop Park, Chipping Norton, 1 y.,
 t w.

(£5.)—J. C. EADY, Irchester Grange, 1 y., 3 m.

(£2.)—H. W. STILGOE, The Grounds, Adderbury, near Banbury,
 1 y., 3 m., 3 d.

& H. C.—H. W. STILGOE, 1 y., 4 m., 4 d.

ie 3rd and 4th Prizes in Class 103 were given by the Shropshire Sheep-
 rs' Association.

x1 *Prizes awarded to Somerset and Dorset Horn Sheep.*

C.—J. T. GREEN, Hunton Bridge Farm, Kings Langley, 1 y., 3 m., 3 w. :
—and H. W. STILGOE, 1 y., 4 m., 2 w.

CLASS 105.—*Pair of Oxford Down Ram Lambs, dropped in 1896.*
[6 entries.]

I. (£10).—A. BRASSEY, M.P., Heythrop Park, Chipping Norton, 4 m.,
2 w.

II. (£5).—C. JAMES, Leavesden, Watford, 4 m. about.

III. (£2).—J. G. WILLIAMS, Pendley Manor, Tring, Herts, 3 m., 3 w.

R.—H. W. STILGOE, The Grounds, Adderbury, near Banbury, Oxon,
3 m., 3 w., 6 d.

CLASS 106.—*Pen of Three Oxford Down Shearling Ewes.*
[6 entries.]

I. (£10).—A. BRASSEY, M.P., Heythrop Park, Chipping Norton, 1 y., 4 m.

II. (£5).—J. C. EADY, Irchester Grange, 1 y., 3 m.

III. (£2).—BARON F. J. DE ROTHSCHILD, M.P., Waddesdon Manor,
Aylesbury, 1 y., 3 m., 1 w.

R.—J. T. GREEN, Hunton Bridge Farm, Kings Langley, 1 y., 3 m., 2 w.

C.—J. G. WILLIAMS, Pendley Manor, Tring, Herts.

SOMERSET AND DORSET HORN.

CLASS 107.—*Somerset and Dorset Horn Shearling Ram.* [8 entries.]

I. (£10).—H. FARTHING, Thurloxtton, Taunton, 1 y., 5 m.

II. (£5).—H. FARTHING, 1 y., 5 m.

III. (£2).—S. KIDNER, Bickley, Milverton, Somerset, 1 y., 4 m., 2 w.

R. & H. C.—S. KIDNER, 1 y., 4 m., 2 w.

**CLASS 108.—*Pair of Somerset and Dorset Horn Ram Lambs, dropped
after Nov. 1st, 1895.*** [3 entries.]

I. (£10).—W. R. FLOWER, West Stafford, Dorchester, 6 m., 2 w. about.

II. (£5).—W. R. FLOWER, 6 m., 2 w. about.

R. & H. C.—E. KIDNER, Cothelstone, near Taunton, Cothelstone
Dukes, 5 m., 1 w., 3 d., and 5 m., 2 d.

CLASS 109.—*Pen of Three Somerset and Dorset Horn Shearling Ewes.*
[3 entries.]

I. (£10).—W. R. FLOWER, West Stafford, Dorchester, 1 y., 5 m., 2 w.
about.

II. (£5).—W. R. FLOWER, 1 y., 5 m., 2 w. about.

R. & H. C.—H. FARTHING, Thurloxtton, Taunton, 1 y., 5 m.

PIGS.

CLASSES 110 to 134.

ing to the prevalence of Swine Fever it was not practicable to hold a Show of Pigs.

GOATS.

The exhibition of Goats was arranged by the British Goat Society.)

.—*Male Goats, any Variety, that had won two or more First s (as Adults) at Shows recognised by the B.G.S., previous to 6th.* [1 entry.]

2) and Special.*—J. W. POLLITT, Mayfield, Ashton-under-Lyne, **ph** (H.B., 353), 6 y., 6 w., bred by J. Grunnell; s., Garnet; d., runnel.

2.—*Male Goats, any Age or Variety, not eligible for Class 1.*
[10 entries.]

2.)—J. W. POLLITT, Mayfield, Ashton-under-Lyne, **Barnet Laddie** 79), 4 y., 5 w.; s., Garnet; d., Nancy.

£1 10s.)—A. C. McMINN, Western House, Kensal Green, W., **Silver** H.B., 494), 1 y., 2 m.; s., Polidore; d., Silver Queen.

(15s.) and Special.†—P. THOMAS, Devonport House, New Malden, **e** (H.B., 317), 5 y., 2 m.; s., Zampa; d., Galatea.

. A. COTTON, The Mount, Bishopstoke, **Chamois**, 4 y., 3 m.

. C.—BARONESS BURDETT COUTTS, Holly Lodge, Highgate, **Emerald** 33), 1 y., 4 m.; s., Garnet; d., Gerty.

3.—*She Goats (over 2 years old), pure bred Toggenburg, imported or bred from imported Stock.* [8 entries.]

3) and Special.‡—A. C. McMINN, Western House, Kensal Green, W., **Beauty**, age unknown (imported).

£1 10s.)—P. THOMAS, Devonport House, New Malden, **Mary** (H.B., 266), 6 y.; s., Zampa; d., Brittany (imported).

15s.)—P. THOMAS, **Muriel** (H.B., 580), age unknown (imported).

3. Hook, Beefolds, Churt, Farnham, **Ursula**, age unknown (imported).

3. Hook, **Alpen Rose**, age unknown (imported):—and his **Edel-** age unknown (imported).

the Best He Goat in the Show, the B.G.S. Silver Medal.

the Stud Goat in Classes 1 and 2, Sire of the Best Two or more Exhibits how, the B.G.S. Bronze Medal.

the Best She Goat in the Show, the B.G.S. Silver Medal.

CLASS 4.—*She Goats (over 2 years old) of any other pure foreign breed.*
[1 entry.]

I. (£2).—B. HOOK, Beefolds, Churt, Farnham, **Silvia** (imported Appenzell), age unknown.

CLASS 5.—*She Goats (over 2 years old, Horned or Hornless), British or Cross-bred, that had won two or more First Prizes as adults, at Shows recognised by the B.G.S., one day previous to April 6th.*
[3 entries.]

I. (£2).—J. W. POLLITT, Mayfield, Ashton-under-Lyne, **Mayblossom** (H.B., 261), 9 y.; s., Spot; d., Rosini.

II. (£1 10s.).—A. C. McMINN, Western House, Kenal Green, W., **Silver Queen** (H.B., 218), 6½ y.; s., Zampa; d., Biddy.

CLASS 6.—*She Goats, Horned (over 2 years old) British or Cross-bred, not eligible for Class 5.* [5 entries.]

I. (£2).—BARONESS BURDETT COURTTS, Holly Lodge, Highgate, **Melton Nancy**, 4 y.; pedigree unknown.

II. (£1 10s.).—Mrs. GOOD, Barrock End, Cowley, Oxon, **Celia** (H.B., 389), 3 y.; s., Fawn Duke; d., Lorna Doone.

III. (15s.).—SAM WOODIWISS, Sedgemere, East Finchley, **Sedgemere Trilby**, 2 y., 1 m.; s., Mikado; d., Nan.

R.—Mrs. RAMSAY, The Woodman, Highgate, **Myrtle 2nd**, 3 y.; d., Myrtle.

CLASS 7.—*She Goats, Hornless (over 2 years old), British or Cross-bred, not eligible for Class 5.* [8 entries.]

I. (£2).—BARONESS BURDETT COURTTS, Holly Lodge, Highgate, **Gerty** (H.B., 422), 5 y., 3 m.; s., Young Barnett; d., Tottie.

II. (£1 10s.).—T. A. COTTON, The Mount, Bishopstoke, **Schneehorn**, 2 y., 2 m.; s., Lorenzo; d., Swiss Girl.

III. (15s.).—BRYAN HOOK, Beefolds, Churt, Farnham, **Mariana** (H.B., 498), 2 y., 7 w.; s., Polidore; d., Ondine.

R.—BRYAN HOOK, **Kokua** (H.B., 437), 3 y., 1 m.; s., Nero; d., Rosalind.

V. H. C.—BARONESS BURDETT COURTTS, **Meadow Sweet** (H.B., 472), 2 y., 2 m.; s., Rough Diamond; d., Duchess 2nd.

C.—S. WOODIWISS, Sedgemere, East Finchley, **Sedgemere Topsy**, particulars unknown.

CLASS 8.—*Goatlings, any Breed or Variety, not exceeding 2 years old.*
(The age reckoned to May 27th.) [6 entries.]

(Goatlings must be entered in the Kid Register to be eligible to compete.)

I. (£2).—BARONESS BURDETT COURTTS, Holly Lodge, Highgate, **Bramble** (K.R., 1084), 1 y., 3 m.; s., Garnet; d., Thistle.

II. (£1 10s.).—R. WALTER, South Street, Ponder's End, **Mabel Queen** (K.R., 1056), 1 y., 2 m., 2 w.; s., Mikado; d., Little May.

III. (15s.).—BRYAN HOOK, Beefolds, Churt, Farnham, **Uma** (K.R., 1030), 1 y., 10 d.; s., Polidore; d., Kokua.

VALTER, **Prairie Queen** (K.R., 1008), 1 y., 7 m., 3 w.; s.,
Patty.

—BARONESS BURDETT COUTTS, **Snow Berry** (K.R., 100), 1 y.,
s., Garnet; d., Patty.

V. POLLITT, Ashton-under-Lyne, **Orange Blossom** (K.R., 1043),
s., Garnet; d., Mayblossom.

PRODUCE.

PRIZES FOR CIDER.

(Open to Growers or Makers.)

*in each Class, a Silver Medal and a Certificate, Second Prize
in each Class, a Bronze Medal and a Certificate.*

*tion Prize, for Best Exhibit in any of the Classes, a Gold
Medal and a Certificate.*

ler must have been made in 1895, and each Exhibit in Cask must
consist of not less than 18 gallons.

Cider made in Devon.

—*Cask of Cider (open to LANDOWNERS only). [2 entries.]*
[No AWARD.]

136.—*12 Bottles of Cider (open to LANDOWNERS only).*
[2 entries.]
[No AWARD.]

137.—*Cask of Cider (open to TENANT FARMERS only).*
[1 entry.]
[No AWARD.]

138.—*12 Bottles of Cider (open to TENANT FARMERS only).*
[1 entry.]
[No AWARD.]

139.—*Cask of Cider (open to CIDER MERCHANTS only).*
[No ENTRY.]

140.—*12 Bottles of Cider (open to CIDER MERCHANTS only).*
[No ENTRY.]

Cider made in Herefordshire.

CLASS 141.—*Cask of Cider (open to LANDOWNERS only).*
[No ENTRY.]

Prizes awarded for Cider.

CLASS 142.—12 *Bottles of Cider (open to LANDOWNERS only).*
[No ENTRY.]

CLASS 143.—*Cask of Cider (open to TENANT FARMERS only).*
[1 entry.]
[No AWARD.]

CLASS 144.—12 *Bottles of Cider (open to TENANT FARMERS only).*
[4 entries.]
[No AWARD.]

CLASS 145.—*Cask of Cider (open to CIDER MERCHANTS only).*
[2 entries.]
[No AWARD.]

CLASS 146.—12 *Bottles of Cider (open to CIDER MERCHANTS only).*
[2 entries.]
[No AWARD.]

Cider made in Somerset.

CLASS 147.—*Cask of Cider (open to LANDOWNERS only.)* [1 entry.]
[No AWARD.]

CLASS 148.—12 *Bottles of Cider (open to LANDOWNERS only).*
[1 entry.]
[No AWARD.]

CLASS 149.—*Cask of Cider (open to TENANT FARMERS only).*
[10 entries.]

I. (Silver Medal.)—W. T. S. TILLEY, North Wootton, Shepton Mallet.

CLASS 150.—12 *Bottles of Cider (open to TENANT FARMERS only).*
[10 entries.]

I. (Silver Medal.)—W. T. S. TILLEY, North Wootton, Shepton Mallet.

II. (Bronze Medal.)—H. J. DAVIS, Hurlingpot, Doultling, Shepton Mallet.

CLASS 151.—*Cask of Cider (open to CIDER MERCHANTS only).*
[1 entry.]
[No AWARD.]

CLASS 152.—12 *Bottles of Cider (open to CIDER MERCHANTS only).*
[1 entry.]
[No AWARD.]

Cider made in Counties other than Devon, Herefordshire, or Somerset.

CLASS 153.—*Cask of Cider (open to LANDOWNERS only.)* [1 entry.]
[No AWARD.]

CLASS 154.—*12 Bottles of Cider (open to LANDOWNERS only).*

[1 entry.]

[No AWARD.]

CLASS 155.—*Cask of Cider (open to TENANT FARMERS only).*

[2 entries.]

[No AWARD.]

CLASS 156.—*12 Bottles of Cider (open to TENANT FARMERS only).*

[3 entries.]

[No AWARD.]

CLASS 157.—*Cask of Cider (open to CIDER MERCHANTS only).*

[2 entries.]

[No AWARD.]

CLASS 158.—*12 Bottles of Cider (open to CIDER MERCHANTS only).*

[3 entries.]

[No AWARD.]

CHEESE.

159.*—*Four Cheeses (the total weight being not less than 224 lbs.) made in 1895.* [23 entries.]

(£20.)—C. W. FRANCIS, Horsington Farm, Templecombe, Bath.

(£12.)—B. J. BUSH, Manor Farm, Laverton, Bath.

(£8.)—E. T. GREEN, Steeple Ashton, Trowbridge.

(£6.)—H. G. ASHMAN, Beacon Farm, Shepton Mallet.

(£4.)—T. C. CANDY, Woolcombe Farm, Cattistock, Dorset.

2 V. H. C.—T. C. CANDY.

J.—CHIPPENHAM CHEESE FACTORY, LIMITED, Chippenham, Wilts.

Mrs. L. J. BUGG, Bungay's Farm, Stalbridge:—**BLACKMORE VALE COMPANY**, Lydlinch, Blandford:—**H. FRANCIS**, Malkin Hill Farm, gton, Somerset:—and **N. J. SIMS**, Pitcombe Farm, Bruton, Somerset.

160.—*Four Cheeses (the total weight being not less than 112 lbs.) made in 1895.* [19 entries.]

(£12.)—T. C. CANDY, Woolcombe Farm, Cattistock, Dorset.

(£8.)—T. C. CANDY.

(£6.)—F. W. J. CROCKER, Redford Farm, Batcombe, Cattistock,

e Second Prize in Class 159 was given by the St. Albans Local
tee.

- IV. (£4).—S. E. RICHARDS, Coldcot Farm, Stourton, Bath.
 V. (£2).—E. T. GREEN, Steeple Ashton, Trowbridge.
 R. & H. C.—W. T. S. TILLEY, North Wootton, Shepton Mallet.
 C.—J. G. PERRITT, Coulston, Westbury, Wilts :—and W. T. S. TILLEY.

CLASS 161.—*Four Cheddar Cheeses (the total weight being not less than 112 lbs.) made in 1895 by a Student who had received not less than a week's instruction in one of the Society's Cheese Schools.* [10 entries.]

- I. (£10).—W. T. S. TILLEY, North Wootton, Shepton Mallet.
 II. (£8).—Miss F. C. DAVIS, Farncombe West Farm, Shepton Mallet.
 III. (£5).—Miss F. C. DAVIS.
 IV. (£3).—W. T. S. TILLEY.
 V. (£2).—E. A. H. BURFITT, Goodedge Farm, North Bruham, Bruton.
 R. & H. C.—Miss L. MILLARD, Theale, Wedmore, Weston-super-Mare.
 C.—Mrs. R. A. PERRY, Godney, Wells :—and Mrs. R. A. PERRY.

CLASS 162.—*Four Cheeses (the total weight being not less than 112 lbs.) made in 1896.* [22 entries.]

- I. (£10).—B. J. BUSH, Manor Farm, Laverton, Bath.
 II. (£8).—H. G. ASHMAN, Beacon Farm, Shepton Mallet.
 III. (£5).—H. G. ASHMAN.
 IV. (£3).—H. CANNON, Milton Clevedon, Evercreech, Bath.
 V. (£2).—W. C. SPENCER, Grey Abbey, North Perrott, Crewkerne.
 R. & V. H. C.—A. OSBORNE, Mappowder, Blandford, Dorset.
 H. C.—G. A. REAKES, Whitchurch Farm, Ston Easton, Bath.
 C.—H. CANNON :—E. DEWDNEY, Dudwell Farm, Chewton Mendip, Bath.

CLASS 163.—*Four Cheeses (the total weight being not less than 112 lbs.) made in 1896 by a Student who had received not less than a week's instruction in one of the Society's Cheese Schools.* [10 entries.]

- I. (£8).—Mrs. R. A. PERRY, Godney, Wells.
 II. (£5).—Mrs. R. A. PERRY.
 III. (£4).—W. T. S. TILLEY, North Wootton, Shepton Mallet.
 IV. (£2).—Mrs. A. M. CREIGHTON, Farncombe Farm, Shepton Mallet.
 V. (£1).—Miss F. C. DAVIS, Farncombe West Farm, Shepton Mallet.
 R. & H. C.—Miss F. C. DAVIS.
 C.—W. T. S. TILLEY.

CLASS 164.—*Ten Loaf or other Truckle Cheeses made in 1896.* [12 entries.]

- I. (£5).—W. C. SPENCER, Grey Abbey, North Perrott, Crewkerne.
 II. (£4).—H. G. ASHMAN, Beacon Farm, Shepton Mallet.
 III. (£3).—E. M. COLES, Emborough Farm, near Bath.

IV. (£2.)—W. C. SPENCER.

V. (£1.)—BLACKMORE VALE DAIRY COMPANY, Lydlinch, Blandford.

R. & H. C.—W. T. S. TILLEY, North Wootton, Shepton Mallet.

CLASS 165.—*Four Caerphilly Cheeses, made in 1896.* [6 entries.]

I. (£3.)—J. BOARD, Hill Farm, East Pennard, Shepton Mallet.

II. (£2.)—J. BOARD.

III. (£1.)—W. T. S. TILLEY, North Wootton, Shepton Mallet.

R. & C.—E. A. H. BURFITT, Goodedge Farm, North Bruham, Bruton.

CLASS 166.—*Fire Cream or other Soft Cheeses.* [12 entries.]

I. (£4.)—Mrs. M. LOXTON, St. James's Dairy, Juliau Road, Bath.

II. (£3.)—Miss E. G. COOK, South Down Farm, Surbiton, Surrey.

III. (£2.)—G. H. COOPER, Highbridge, Somerset.

IV. (£1.)—C. C. TUDWAY, Walcombe Dairy, Wells, Somerset.

R. & H. C.—E. FLANDERS, Regent Street, Derby.

H. C.—Mrs. M. CUSTANCE, Woodlands, Southwater, Horsham.

C.—Mrs. J. P. PHILLIPS, Penerley Farm, Beaulieu, Southampton.

BUTTER AND CREAM.

CLASS 167.—*3 lbs. of Fresh (or very slightly salted) Butter, in pound plain rolls or brick shapes, made of Cream from Cows other than Channel Island Breeds.* [31 entries.]

I. (£5.)—J. WILLIAMS, Regilbury Park, Winford, near Bristol.

II. (£3.)—Hon. A. HOLLAND-HIBBERT, Munden, Watford.

III. (£2.)—M. J. WILLIAMS, North Hill Farm, Chew Stoke.

IV. (£1.)—General A. C. GERRARD, Lamer Park, Wheathampstead, Herts.

R. & V. H. C.—Mrs. H. PIKE, Berry Barton, Sidmouth, Devon.

V. H. C.—LONDON, GLOUCESTER, AND NORTH HANTS DAIRY COMPANY, LIMITED, Whatley Road, Clifton.

H. C.—Rev. J. GORING, Wiston Park, Steyning:—Miss M. HAMMOND, St. Gemain's Farm, St. Albans:—H. A. MASTERS, Engelberg House, Kenninghall Road, Clapton, London, N.E.:—Mrs. T. SPILLER, Ulcombe, Pottery, Honiton:—Mrs. W. T. S. TILLEY, North Wootton, Shepton Mallet:—C. C. TUDWAY, Walcome Dairy, Wells, Somerset:—R. UNDERWOOD, Little Gaddesden, Great Berkhamstead:—and Miss A. A. WALKER, Whittock's End, *via* Dymock.

C.—J. BAINES, West End Farm, Henfield, Sussex:—E. BEECHENER, The Green Farm, Barton Amphill, Bedfordshire:—S. F. BERRY, Old Wellbury, Hitchin:—J. T. DIBSDALL, Burnt House Farm, Chelvey, West Town, Bristol:—and J. F. HALL, Chilcote Manor Farm, Wells, Somerset.

CLASS 168.—3 *lbs. of Fresh (or very slightly salted) Butter, in pound plain rolls or brick shapes, made of Cream from Cows of Channel Island Breeds only.* [40 entries.]

I. (£5).—LORD ROTHSCHILD, Tring Park, Herts.

II. (£3) and Special (£1.)*—HON. A. HOLLAND-HIBBERT, Munden, Watford.

III. (£2).—MRS. M. CUSTANCE, Woodlands, Southwater, Horsham.

IV. (£1) and Special (£1.)*—S. F. BERRY, Old Wellbury, Hitchin.

R. & V. H. C.—C. COMBE, Cobham Park, Surrey.

V. H. C.—T. GOOCH, Bovington, Hemel Hempstead:—MRS. C. MCINTOSH, Havering Park, Romford, Essex:—A. W. RUGGLES-BRICE, Spain's Hall, Braintree, Essex:—C. VAN RAALTE, Home Farm, Aldenham Abbey, Watford:—and REV. S. H. WILLIAMS, Great Linford Rectory, Newport Pagnell.

H. C.—GLYNDE CREAMERIES, LIMITED, Glynde, Lewes, Sussex:—J. F. HALL, Chilcote Manor Farm, Wells, Somerset:—MRS. F. KIBBY, The Dairy, Newton Park, Bristol:—H. J. LUBBOCK, Newberries, Radlett, St. Albans:—LADY MATHER-JACKSON, Llantilio Court, Abergavenny:—LORD POLTIMORE, Poltimore Park, Exeter:—M. SETH-SMITH, Colwood Park Dairy Farm, Bolney, Sussex:—and J. G. WILLIAMS, Park Farm, Nempnett, Lear Bristol.

C.—MRS. M. HAMMOND, St. Germain's Farm, St. Albans:—COL. W. A. HANKEY, Beaulieu, near Hastings:—C. T. PART, Aldenham Lodge, Radlett, St. Albans:—COL. T. B. SHAW-HELLIER, Womburne Wodehouse, Wolverhampton:—and M. J. WILLIAMS, North Hill Farm, Chew Stoke.

Class Commended.

CLASS 169.—3 *lbs. of Fresh (or very slightly salted) Butter, in pound plain rolls or brick shapes, made by a Student who had attended a course of instruction at any Butter School conducted by the Society or by a County Council.* [14 entries.]

I. (£5).—MISS F. M. COLE, Home Farm, Tring, Herts.

II. (£3).—MISS M. J. WILLIAMS, Regilbury Park, Winford.

III. (£2).—A. B. GALE, Downside Farm, Cobham.

IV. (£1).—W. COLF, College Farm, Wells, Somerset.

R. & V. H. C.—MRS. A. C. MEAD, The Woodlands, Bicton, near Shrewsbury.

H. C.—MRS. W. T. S. TILLEY, North Wootton, Shepton Mallet:—and Miss A. A. WALKER, Whittock's End, *viâ* Dymock.

C.—MRS. M. BATH, Lutsey Farm, Worton, Devizes:—and Miss A. YEATES, Barrow Court Farm, Flax Bourton, Somerset.

CLASS 170.—3 *lbs. of Fresh (or very slightly salted) Butter, in pound plain rolls or brick shapes, made from Scalded Cream.* [20 entries.]

I. (£5).—J. G. WILLIAMS, Park Farm, Nempnett, Bristol.

II. (£3).—LORD ROTHSCHILD, Tring Park, Tring, Herts.

* Three Special Prizes of 1l. each were given for Butter, which had the best keeping qualities, exhibited in Class 167, 168, 169, 170, or 171. 1 lb. was taken on the first day of the Show from each Prize lot of Butter in the Classes named, and was judged on the last day of the Show.

II. (£2).—J. WILLIAMS, Regilbury Park, Winford, Bristol.

V. (£1).—Miss M. MATTINSON, care of Mrs. J. B. Taylor, Gorhambury, Albans.

. & V. H. C.—Hon. A. HOLLAND-HIBBERT, Munden, Watford.

. H. C.—J. F. HALL, Chilcote Manor Farm, Wells, Somerset.

. C.—T. COLE, Gollege Farm, Wells, Somerset :—Mrs. H. PIKE, Berry on, Sidmouth, Devon :—LORD POLTIMORE, Poltimore Park, Exeter :—M. J. WILLIAMS, North Hill Farm, Chew Stoke.

.—T. BEVINGTON, The Grove, Witham, Essex :—H. L. C. BRASSEY, ton Hall, Aylesford, Kent :—J. T. DIBSDALL, Burnt House Farm, vey, West Town, Bristol :—E. C. KEYSER, Aldermaston Court, Reading : id Mrs. W. T. S. TILLEY, North Wootton, Shepton Mallet.

ss 171.—3 lbs. of Butter, to which no salt whatever had been added, in pound plain rolls or brick shapes. [47 entries.]

(£5).—C. COMBE, Cobham Park, Surrey.

L (£3) and Special (£1).—LORD ROTHSCHILD, Tring Park, Herts.

II. (£2).—T. GOOCH, Bovingdon, Hemel Hempstead.

V. (£1).—Hon. A. HOLLAND-HIBBERT, Munden, Watford.

. & V. H. C.—T. BEVINGTON, The Grove, Witham, Essex.

. H. C.—A. W. RUGGLES-BRISE, Spain's Hall, Braintree, Essex.

L C.—S. BAXENDALE, Bonningtons, Ware :—J. F. HALL, Chilcote or Farm, Wells, Somerset :—Miss M. HAMMOND, St. Germain's Farm, Albans :—G. P. MEAD, The Woodlands, Bicton, Salop :—LORD POLTIMORE,imore Park, Exeter :—Mrs. W. T. S. TILLEY, North Wootton, Shepton let :—C. VAN RAALTE, Home Farm, Aldenham Abbey, Watford :—and . S. H. WILLIAMS, Great Linford Rectory, Newport Pagnell.

.—Mrs. M. BATH, Lutsey Farm, Worton, Devizes :—S. F. BERRY, Old lbury, Hitchin :—W. MCK. BRADLEY, Leylands, Meopham, Kent :—A. MASTERS, Engelberg House, Kenninghall Road, Clapton, London, N.E. : . D. T. PARSONS, jun., Ashurst Place, Langton, Tunbridge Wells :—and SETH-SMITH, Colwood Park Dairy Farm, Bolney, Sussex.

ss 172.—12 lbs. of Salted Butter, in a jar or crock, delivered to the Secretary, care of Mr. H. Gibson, Bleak House, St. Albans, four weeks before the Show. [15 entries.]

(£5).—J. WILLIAMS, Regilbury Park, Winford, Bristol.

L (£3).—Mrs. W. T. S. TILLEY, North Wootton, Shepton Mallet.

II. (£2).—J. F. HALL, Chilcote Manor Farm, Wells, Somerset.

V. (£1).—M. J. WILLIAMS, North Hill Farm, Chew Stoke.

.—H. A. MASTERS, Engelberg House, Kenninghall Road, Clapton, don, N.E.

Three Special Prizes of 1l. each were given for Butter, which had the best sing qualities, exhibited in Class 167, 168, 169, 170, or 171. 1 lb. was n on the first day of the Show from each Prize lot of Butter in the Classes ed, and was judged on the last day of the Show.

1 . *Prizes awarded for Cream and Butter-Making.*

CLASS 173.*—4 *half-pounds of Clotted or Devonshire Cream, packed either in tins or earthen jars.* [13 entries.]

- I. (£3.)—W. BEER, Trinity Dairy, Barnstaple.
- II. (£2.)—Mrs. E. VARCOE, St. Julian's, St. Albans.
- III. (£1.)—E. DYER, Kenn Court Dairy, Clevedon.
- R.—E. KIDNER, Cothelstone, Taunton.

BUTTER-MAKING COMPETITIONS.

(These Prizes were awarded for the Best and Largest quantity of Butter made from a given quantity of Cream in the cleanest and most approved method.)

CLASS 174.—*On the first day of the Show, open only to Students who had attended a course of instruction at any Butter School conducted by the Society or by a County Council.* [28 entries.]

- I. (£5.)†—A. BAYNES, Broxton Hall, Dunmow, Essex.
- II. (£3.)—Miss H. BAYNES, The Grove, Witham, Essex.
- III. (£2.)—Miss A. YEATES, Barrow Court Farm, Flax Bourton, Somerset.
- IV. (£1.)—Miss S. S. SPARROW, Ellis's Farm, Hardwicke, Gloucester.
- V. (10s.)—Miss A. B. WALKER, Dog Kennel Farm, Hitchin, Herts.
- H. C.—Miss E. A. GLENN, Little Barford, St. Neots, Hunts :—Miss A. M. WATTS, Fairgreen, Chipping Norton :—Miss M. WEBB, Warrior's Lodge, Kenilworth, Warwickshire :—and Miss M. I. DAUNTON, Worston House, Highbridge, Somerset.
- C.—Mrs. M. BATH, Lutsey, Worton, Devizes, Wilts :—W. COLE, Gollege Farm, Wells, Somerset :—and Miss A. COUNSELL, Tarnock, Axbridge.

CLASS 175.—*On the second day of the Show, open to any woman.* [31 entries.]

- I. (£5.)†—Miss M. BEECHENER, Barton Amphthill, Beds.
- II. (£3.)—Miss E. J. GERARD, Offerton, Hindlip, Worcester.
- III. (£2.)—Miss A. YEATES, Barrow Court Farm, Flax Bourton, Somerset.
- IV. (£1.)—Miss R. CHARLES, Great Wacton, Bromyard.
- V. (10s.)—Miss A. M. WATTS, Fairgreen, Chipping Norton.
- H. C.—Miss H. BAYNES, The Grove, Witham, Essex :—Miss F. M. COLE, Home Farm, Tring, Herts :—and Mrs. N. COMER, West of England Creamery, Highbridge, Somerset.
- C.—Miss E. G. COOK, South Down Farm, Surbiton, Surrey :—Miss E. M. A. CROOK, Mentmore Dairy, Leighton Buzzard :—Miss G. YOUNG, 81, Drummond Street, Euston, London, N.W. :—and Miss M. I. DAUNTON, Worston House, Highbridge, Somerset.

* The Prizes in Class 173 were given by the St. Albans Local Committee.

† Given by the St. Albans Local Committee.

CLASS 176.—*On the third day of the Show, open to any Man or Woman, except the Winner of the 1st Prize in Class 175.* [34 entries.]

I. (£5.)—Miss E. J. GERRARD, Offerton, Hindlip, Worcester.

II. (£3.)—Miss H. BAYNES, The Grove, Witham, Essex.

III. (£2.)—Miss L. WALKER, Whittock's End, *viâ* Dymock.

IV. (£1.)—Mrs. M. BATH, Lutsey Farm, Worton, Devizes.

V. (10s.)—Miss E. G. COOK, Southdown Farm, Surbiton, Surrey.

V. H. C.—A. BAYNES, Broxted Hall, Dunmow, Essex :—and Miss A. C. COLE, Home Farm, Easton Neston, Towcester, Northamptonshire.

H. C.—Mrs. E. R. BLACKWELL, Coldbath Farm, Tunbridge Wells :—Miss R. CHARLES, Great Wacton, Bromyard :—W. COLE, Gollege Farm, Wells, Somerset :—Mrs. N. COMER, West of England Creamery, Highbridge :—Miss A. M. WATTS, Fairgreen, Chipping Norton :—and Miss A. YEATES, Barrow Court Farm, Flax Bourton, Somerset.

C.—Miss F. M. COLE, Home Farm, Tring, Herts :—Miss R. GEORGE, Harpenhoe Bury, Barton Ampthill, Beds. :—Miss E. A. GLENN, Little Barford, St. Neots, Hunts. :—Mrs. A. HODGE, Home Farm, Charlton Portbury, Somerset :—Miss A. B. WALKER, Dog Kennel Farm, Hitchin, Herts :—and Miss M. WEBB, Warrior's Lodge, Kenilworth, Warwickshire.

CLASS 177.—*On the fourth day of the Show, open to any Man or Woman, except the Winners of the 1st Prizes in Classes 175 and 176.* [33 entries.]

I. (£5.)—Miss E. M. A. CROOK, Mentmore Dairy, Leighton Buzzard.

II. (£3.)—Miss H. BAYNES, The Grove, Witham, Essex.

III. (£2.)—Mrs. A. HODGE, Home Farm, Charlton, Portbury, Somerset.

IV. (£1.)—Mrs. N. COMER, West of England Creamery, Highbridge, Somerset.

V. (10s.)—Miss R. CHARLES, Great Wacton, Bromyard.

R.—Miss E. J. GERRARD, Offerton, Hindlip, Worcester.

H. C.—Mrs. M. BATH, Lutsey Farm, Worton, Devizes :—A. BAYNES, Broxted Hall, Dunmow, Essex :—Miss M. J. CAMP, Highfield's Farm, Wall, Derby :—W. COLE, Gollege Farm, Wells, Somerset :—and Miss A. WATTS, Fairgreen, Chipping Norton.

C.—Mrs. BEECHENER, Green Farm, Barton Ampthill, Beds. :—Mrs. E. R. BLACKWELL, Coldbath Farm, Tunbridge Wells :—Miss E. G. COOK, Southdown Farm, Surbiton, Surrey :—Miss A. B. WALKER, Dog Kennel Farm, Hitchin, Herts :—Miss L. WALKER, Whittock's End, *viâ* Dymock :—Miss A. YEATES, Barrow Court Farm, Flax Bourton, Somerset :—Miss M. I. LINTON, Worston House, Highbridge, Somerset :—and Miss A. COUNSELL, Mock, Axbridge.

CLASS 178.—*On the fifth day of the Show, open to any Dairymaid working for wages not exceeding £20 a-year.* [11 entries.]

I. (£3.)—Miss R. CHARLES, Great Wacton, Bromyard.

II. (£2.)—Miss M. BEECHENER, Barton Ampthill, Beds.

III. (£1.)—Miss E. A. GLENN, Little Barford, St. Neots, Hunts.

IV. (10s.)—Mrs. N. COMER, West of England Creamery, Highbridge.

H. C.—Miss A. C. COLES, Home Farm, Easton Neston, Towcester, Northamptonshire:—Miss L. WALKER, Whittock's End, *via* Dymock:—Miss M. WEBB, Warrior's Lodge, Kenilworth, Warwickshire:—and Miss A. COUNSELL, Tarnock, Axbidge.

CHAMPION PRIZES.

On the fifth day of the Show the Winners of Prizes in Classes 174, 175, 176, 177, and 178 competed for:—

I. (A Gold Medal, and the Society's Certificate.)—Miss E. J. GERRARD.

II. (A Silver Medal, and the Society's Certificate.)—Miss H. BAYNES.

III. (A Bronze Medal, and the Society's Certificate.)—Mr. A. BAYNES.

H. C.—All other Competitors.

MILKING COMPETITION.

CLASS 179.—For Men 20 years of age and over. [12 entries.]

I. (£1 10s.)—T. HEWITT, Munden, Watford.

II. (£1.)—J. ROBINSON, Astwick Manor, Hatfield.

III. (15s.)—W. BATES, care of Ernest Mathews, Chequers Mead, Potters Bar.

IV. (10s.)—W. CHAPMAN, Bonningtons, Ware.

R.—A. SWAIN, Sloe Hill, Hitchin.

CLASS 180.—For Women. [8 entries.]

I. (£1 10s.) and Champion (£3.)*—Miss G. YOUNG, 81, Drummond Street, Euston, London, N.W.

II. (£1.)—Mrs. N. COMER, West of England Creamery, Highbridge.

III. (15s.)—Miss R. CHARLES, Great Wacton, Bromyard.

IV. (10s.)—Miss A. C. COLES, Home Farm, Easton Neston, Towcester, Northamptonshire.

H. C.—Miss M. MATTINSON, care of Mrs. J. B. Taylor, Gorhambury, St. Albans.

CLASS 181.—For Youths under 20 years of age. [4 entries.]

I. (£1) and R. for Champion.*—A. YOUNG, Harold's Park, Nasing, Essex.

II. (15s.)—G. BAYNES, Broxted Hall, Dunmow.

III. (10s.)—A. GUTHRIE, Cunynhame Hill, St. Albans.

IV. (5s.)—T. CARL, High Firs, Harpenden, Herts.

* Given by the St Albans Local Committee, for the best Competitor in Class 179, 180, or 181.

DAIRY APPLIANCE.

CLASS 182.—*A Gold Medal was offered for the best Acidimeter.*

[No exhibit.]

HORSE-SHOEING COMPETITION.

The Registration Committee of the Farriers Company admitted the winners First Prizes in these competitions to the official Register free of charge, on their satisfying the Judges that they had a fair knowledge of the structure of the horse's foot, and on the necessary application being made to the Company in the prescribed form.

CLASS 183.—*Best Shoeing of a Nag Horse by a Smith on the third day of the Show.* [21 entries.]

I. (£5).—W. RUDGE, Brampton, Madley, Herefordshire.

II. (£3).—E. PROSSER, Senny Bridge, near Brecon.

III. (£2).—H. KERSLAKE, R.S.S., Williton, near Taunton, Somerset.

IV. (£1).—J. MAY, R.S.S., Park Street, Guildford.

R. & V. H. C.—F. MAY, R.S.S., Send, Woking.

V. H. C.—W. GRIMSDELL, High Street, Watford:—G. JONES, R.S.S., Smith's Shop, The Hendre, Monmouth:—and T. KERR, Twyford, Berks.

C.—W. F. FAIRBALL, Fern Bank, Upper Caterham.

CLASS 184.—*Best Shoeing of a Cart Horse by a Smith on the fourth day of the Show.* [17 entries.]

I. (£5).—T. KERR, Twyford, Berks.

II. (£3).—W. DENNER, sen., Cockpit Hill, Cullompton, Devon.

III. (£2).—H. KERSLAKE, R.S.S., Williton, near Taunton, Somerset.

IV. (£1).—W. STANTON, Castle Street, Luton.

R. & V. H. C.—F. MAY, R.S.S., Send, Woking, Surrey.

V. H. C.—W. GRIMSDELL, High Street, Watford.

C.—T. WOODS, Elstow, Bedfordshire.

SHEEP-SHEARING.

CLASS 185.—*Best Shearing of Two Sheep on the fifth day of the Show by Competitors under sixteen years of age.* [1 entry.]

II. (£1).—H. POULTNEY, Congresbury, Somerset.

CLASS 186.—*Best Shearing of Two Sheep on the fifth day of the Show by Competitors of sixteen and under twenty years of age.* [3 entries.]

I. (£3).—ALBION DAVID, Long Sutton, Langport.

II. (£2).—E. DAVID, Long Sutton, Langport.

III. (£1).—S. BALL, Monkton, Swindon.

CLASS 187.—*Best Shearing of Two Sheep on the fifth day of the Show by Competitors twenty years of age and over.* [18 entries.]

- I. (£4.)—O. POULTNEY, Congresbury, Somerset.
- II. (£3.)—M. DAVID, Long Sutton, Langport.
- III. (£2.)—W. ALMOND, Langham, Oakham.
- IV. (£1.)—A. BEDFORD, Poten End, Hemel Hempstead, Herts.
- H. C.—J. CLARK, Ayot, St. Peter's, near Welwyn.

HONEY, HIVES, ETC.

(The exhibition of Honey, Hives, &c., was arranged by the British Beekeepers' Association.)

CLASS 1.—*Collection of Hives and Appliances, to consist of the following articles:—(Open to Manufacturers of Bee Appliances only, being articles sold in their usual way of trade.)* [3 entries.]

Three-Frame Hives complete. [Note.—These Hives must be fitted with arrangements for Storifying]:—

- 1 pair of Section Racks fitted with Sections;
- 1 Extractor, 1 slow stimulating Feeder, 1 rapid Feeder;
- 1 Smoker or other Instrument for quieting Bees;
- 1 Super Clearer;
- 1 Veil;
- 1 Swarm Box for travelling purposes;
- 1 Nucleus Hive for travelling;
- 1 Travelling Crate for Comb Honey;

and other distinct articles not specified, at the discretion of the Exhibitor.

- I. (£3.)—J. S. GREENHILL, 80, Graham Road, Wimbledon.
- II. (£2.)—T. B. BLOW, Welwyn, Herts.
- III. (£1.)—T. B. BLOW.

CLASS 2.—*Observatory Hive, of not less than two Frames with Bees and Queen; each comb to be visible on both sides.* [3 entries.]

(N.B.—The Hive must be provided with arrangements for the flight of the Bees during the time of the Show.)

- I. (£1 10s.)—J. S. GREENHILL, 80, Graham Road, Wimbledon.
- II. (£1.)—T. B. BLOW, Welwyn, Herts.

CLASS 3.—*Best and most complete Frame Hive, for general use, unpainted.* [8 entries.]

- I. (£1.)—JAS. LEE AND SON, 5, Holborn Place, London, W.C.
- II. (15s.)—T. LANAWAY AND SONS, 26, Station Road, Redhill.
- III. (10s.)—J. S. GREENHILL, 80, Graham Road, Wimbledon.

1.—*Most complete and inexpensive Frame Hive for Cottager's use, unpainted, price not to exceed 10s. 6d.* [7 entries.]

1.)—JAS. LEE AND SON, 5, Holborn Place, London, W.C.

15s.)—J. S. GREENHILL, 80, Graham Road, Wimbledon.

10s.)—G. H. VARTY, Burnaston, Etwall, near Derby.

1.—*Six Sections of Comb Honey, gathered during 1896, the gross weight to approximate 6 lbs.* [11 entries.]

1s.)—H. W. SEYMOUR, 47, Market Place, Henley-on-Thames.

1.—*Exhibit of Run or Extracted Honey in jars not exceeding each, gathered during 1896, gross weight to approximate 12 lbs. entries.]*

1s.)—H. W. SEYMOUR, 47, Market Place, Henley-on-Thames.

10s.)—R. DYMOND, Ferney House, Southgate, N.

5s.)—D. S. ASTON, 9, St. Peter's Street, St. Albans.

1.—*Twelve Sections of Comb Honey, approximate weight 12 lbs., gathered during 1895, or in any previous year.* [4 entries.]

1s.)—WM. WOODLEY, Beedon, Newbury.

0s.)—H. JONAS, 64, Redcliffe Gardens, London, S.W.

5s.)—T. B. BLOW, Welwyn, Herts.

1.—*Three Shallow Frames of Comb Honey, for extracting, gathered during 1896.* [4 entries.]

1s.)—D. S. ASTON, 9, St. Peter's Street, St. Albans.

1.—*Exhibit of Granulated Honey of any year, in jars not exceeding 2 lbs. each, gross weight to approximate 12 lbs.*
[13 entries.]

1s.)—H. W. SEYMOUR, 47, Market Place, Henley-on-Thames.

0s.)—WM. WOODLEY, Beedon, Newbury.

5s.)—D. H. DURRANT, 1, Gunnersbury Lane, Acton, W.

0.—*Best and most Attractive Display of Honey, in any form, of any year, staged on space 3 ft. by 3 ft., height not to exceed above the table. The gross weight to be stated.* [2 entries.]

10s.)—WM. C. YOUNG, Bushey Grove, Watford.

10s.)—E. DRINEQUIER, Margate Street, Dover.

1.—*For the best Exhibit of not less than 3 lbs. of Wax, produced by the Exhibitor's own Bees.* [7 entries.]

1. 6d.)—THOS. WALKER, Jun., Brind Leys Farm, near Howden.

1s.)—R. T. SHEA, Little Wakering, Southend.

2s. 6d.)—D. S. ASTON, 9, St. Peter's Street, St. Albans.

CLASS 12.—*For any practically Useful Invention connected with Bee-keeping, introduced since 1894.* [3 entries.]

Certificate of Merit.—JAS. LEE AND SON, 5, Holborn Place, London, W.C.

CLASS 13.—*Most interesting and instructive Exhibit of any kind connected with Bee Culture not mentioned in the foregoing Classes, and to which Prizes have not been previously awarded, including Mead, Honey Vinegar, and Articles of Food of any kind in which Honey is an ingredient.* [6 entries.]

Bronze Medals.—H. W. SEYMOUR, 47, Market Place, Henley-on-Thames:—WM. C. YOUNG, Bushey Grove, Watford:—G. W. BANCES, Green Street Green, Dartford:—and T. G. WORSFOLD, Fairview, Watford.

POULTRY.

CLASS 1.—COCHINS (CINNAMON and BUFF), COCK. [5 entries.]

I. (£1 10s.)—Miss M. J. MARSHALL, *buff*.

II. (15s.)—Miss M. J. MARSHALL, *buff*.

V. H. C.—H. TOMLINSON, *buff*.

CLASS 2.—COCHINS (CINNAMON and BUFF), HEN. [6 entries.]

I. (£1 10s.)—Miss M. J. MARSHALL, *buff*.

II. (15s.)—Mrs. R. HOLLAND, *buff*.

III. (5s.)—Mrs. B. RADCLIFFE, *buff*.

H. C.—Miss M. J. MARSHALL, *buff*.

CLASS 3.—COCHINS (PARTRIDGE-FEATHERED OR WHITE), COCK. [5 entries.]

I. (£1 10s.)—Miss M. J. MARSHALL, *partridge*.

II. (15s.)—Miss M. J. MARSHALL, *partridge*.

III. (5s.)—Mrs. R. HOLLAND, *partridge*.

C.—A. T. WATTS, *partridge*.

CLASS 4.—COCHINS (PARTRIDGE-FEATHERED OR WHITE), HEN. [3 entries.]

I. (£1 10s.)—Miss M. J. MARSHALL, *partridge*.

CLASS 5.—BRAHMAS (DARK), COCK. [3 entries.]

I. (£1 10s.)—S. W. THOMAS.

II. (15s.)—Mrs. R. HOLLAND.

H. C.—W. MOORE.

Prizes awarded for Poultry.

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CLASS 6.—BRAHMAS (DARK), HEN. [5 entries.]

- I. (£1 10s.)—H. HOW.**
- II. (15s.)—MRS. R. HOLLAND.**
- V. H. C.—P. L. BENSON, M.D.**
- C.—S. W. THOMAS.**

CLASS 7.—BRAHMAS (LIGHT), COCK. [4 entries.]

- I. (£1 10s.)—W. F. POTTER.**
- II. (15s.)—MRS. R. HOLLAND.**
- V. H. C.—MANOR POULTRY FARM.**
- H. C.—MRS. M. L. SPERLING.**

CLASS 8.—BRAHMAS (LIGHT), HEN. [3 entries.]

- I. (£1 10s.)—W. F. POTTER.**
- II. (15s.)—H. HOW.**
- H. C.—MRS. R. HOLLAND.**

CLASS 9.—LANGSHANS, COCK. [4 entries.]

- I. (£1 10s.)—P. MARSH.**
- II. (15s.)—W. ROWLINGS.**
- V. H. C.—MISS F. LUCAS.**
- C.—C. SEABROOKE.**

CLASS 10.—LANGSHANS, HEN. [4 entries.]

- I. (£1 10s.)—P. MARSH.**
- II. (15s.)—G. FIELDER.**
- V. H. C.—MISS F. LUCAS.**

CLASS 11.—PLYMOUTH ROCKS, COCK. [8 entries.]

- I. (£1 10s.)—J. SANDERCOCK.**
- II. (15s.)—A. POLY-DIDIER.**
- III. (5s.)—A. and S. DONKIN.**
- V. H. C.—J. H. DAVIS :—and R. WALTER.**
- H. C.—C. KIDMAN.**

CLASS 12.—PLYMOUTH ROCKS, HEN. [11 entries.]

- I. (£1 10s.)—A. POLY-DIDIER.**
- II. (15s.)—A. POLY-DIDIER**
- III. (5s.)—W. SHAPLAND.**
- V. H. C.—C. KIDMAN :—MANOR POULTRY FARM :—and R. WALTER.**
- H. C.—H. PICKLES.**

CLASS 13.—WYANDOTTES, COCK. [10 entries.]

I. (£1 10s.)—BOADEN and THOMAS.

II. (15s.)—F. TURNER.

III. (5s.)—MRS. FRANKLIN.

V. H. C.—BOADEN and THOMAS :—F. S. LONGSTAFF :—and F. TURNER.

CLASS 14.—WYANDOTTES, HEN. [6 entries.]

I. (£1 10s.)—BOADEN and THOMAS.

II. (15s.)—G. DOBLE.

III. (5s.)—H. F. WOOLLATT.

V. H. C.—F. STOODLEY.

CLASS 15.—ORPINGTONS, COCK. [10 entries.]

I. (£1 10s.)—J. PARTINGTON.

II. (15s.)—J. REEVES.

III. (5s.)—J. ENGLAND.

V. H. C.—H. M. POLLETT.

H. C.—HUNTLEY and PICKARD :—HUNTLEY and PICKARD :—and HUNTLEY and PICKARD.

CLASS 16.—ORPINGTONS, HEN. [10 entries.]

I. (£1 10s.)—HUNTLEY and PICKARD.

II. (15s.)—J. REEVES.

III. (5s.)—J. PARTINGTON.

V. H. C.—HUNTLEY and PICKARD :—and HUNTLEY and PICKARD.

CLASS 17.—SPANISH, COCK. [5 entries.]

I. (£1 10s.)—H. HYDE.

II. (15s.)—G. DOBLE.

V. H. C.—J. HUNT.

CLASS 18.—SPANISH, HEN. [7 entries.]

I. (£1 10s.)—H. HYDE.

II. (15s.)—H. HYDE.

III. (5s.)—L. HAKE.

CLASS 19.—MINORCAS, COCK. [4 entries.]

I. (£1 10s.)—A. G. PITTS.

II. (15s.)—T. C. PLOWMAN.

V. H. C.—FURSLAND BROS.

CLASS 20.—MINORCAS, HEN. [8 entries.]

I. (£1 10s.)—J. W. CROSSMAN.

II. (15s.)—A. LEWIS.

(5s.)—FURSLED BROS.

C.—A. G. PITTS.

CLASS 21.—LEGHORNS (ANY VARIETY), COCK. [7 entries.]

£1 10s.)—WADE BROS., *white*.

(15s.)—H. and A. P. SIMPSON.

(5s.)—WADE BROS., *white*.

CLASS 22.—LEGHORNS (ANY VARIETY), HEN. [6 entries.]

£1 10s.)—Mrs. SINKINS, *white*.

(15s.)—Mrs. LISTER-KAY.

(5s.)—E. H. WOOD.

23.—HAMBURGS (GOLD OR SILVER SPANGLED), COCK. [2 entries.]

£1 10s.)—Rev. S. ASHWELL.

24.—HAMBURGS (GOLD OR SILVER SPANGLED), HEN. [2 entries.]

£1 10s.)—H. PICKLES.

25.—HAMBURGS (GOLD OR SILVER PENCILLED), COCK. [6 entries.]

£1 10s.)—H. PICKLES.

15s.)—M. JACKSON.

(5s.)—W. SNELL.

26.—HAMBURGS (GOLD OR SILVER PENCILLED), HEN. [8 entries.]

£1 10s.)—M. JACKSON.

15s.)—R. BROWN, *gold*.

(5s.)—Miss M. A. THOMPSON.

CLASS 27.—HAMBURGS (BLACK), COCK. [7 entries.]

£1 10s.)—D. W. LEWIS.

15s.)—H. PICKLES.

(5s.)—H. W. HANGER.

C.—R. W. WHITTAKER.

CLASS 28.—HAMBURGS (BLACK), HEN. [8 entries.]

£1 10s.)—H. CONNOP.

15s.)—H. W. HANGER.

(5s.)—H. PICKLES.

—HUNTLEY and PICKARD:—and W. SNELL.

CLASS 29.—DORKINGS (COLOURED), COCK. [7 entries.]

£1 10s.)—A. LUCKIN.

15s.)—C. LUCKIN.

(5s.)—J. F. HILL.

CLASS 30.—DORKINGS (COLOURED), HEN. [3 entries.]

I. (£1 10s.)—A. LUCKIN.

II. (15s.)—H. MEREDITH.

CLASS 31.—DORKINGS (SILVER GREY), COCK. [7 entries.]

I. (£1 10s.)—J. BLUNDELL.

II. (15s.)—O. E. CRESSWELL.

III. (5s.)—Mrs. M. SPERLING.

V. H. C.—W. H. SNELL.

C.—H. MEREDITH.

CLASS 32.—DORKINGS (SILVER GREY), HEN. [5 entries.]

I. (£1 10s.)—O. E. CRESSWELL.

II. (15s.)—J. BLUNDELL.

H. C.—O. E. CRESSWELL.

CLASS 33.—DORKINGS (WHITE OR CUCKOO), COCK. [3 entries.]

I. (£1 10s.)—J. J. G. WOODCOCK, *white*.II. (15s.)—O. E. CRESSWELL, *white*.

CLASS 34.—DORKINGS (WHITE OR CUCKOO), HEN. [3 entries.]

I. (£1 10s.)—J. J. G. WOODCOCK, *white*.II. (15s.)—O. E. CRESSWELL, *white*.H. C.—O. E. CRESSWELL, *white*.

CLASS 35.—GAME (BLACK-BREASTED REDS), COCK. [2 entries.]

I. (£1 10s.)—C. W. BRIERLEY.

H. C.—J. C. HUXTABLE.

CLASS 36.—GAME (BLACK-BREASTED REDS), HEN. [4 entries.]

I. (£1 10s.)—C. W. BRIERLEY.

II. (15s.)—J. C. HUXTABLE.

CLASS 37.—GAME (BROWN-BREASTED REDS), COCK. [2 entries.]

I. (£1 10s.)—C. W. BRIERLEY.

CLASS 38.—GAME (BROWN-BREASTED REDS), HEN. [2 entries.]

I. (£1 10s.)—C. W. BRIERLEY.

CLASS 39.—GAME (PILE OR ANY OTHER VARIETY), COCK. [4 entries.]

I. (£1 10s.)—J. C. HUXTABLE.

II. (15s.)—C. W. BRIERLEY.

CLASS 40.—GAME (PILE, OR ANY OTHER VARIETY), HEN. [2 entries.]

I. (£1 10s.)—C. W. BRIERLEY.

Prizes awarded for Poultry.

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CLASS 41.—GAME (OLD ENGLISH), COCK. [5 entries.]

(£1 10s.)—E. S. FELLOWS.

(15s.)—W. NIXON.

CLASS 42.—GAME (OLD ENGLISH), HEN. [3 entries.]

(£1 10s.)—G. ROPE.

(15s.)—E. BARNES.

CLASS 43.—INDIAN GAME, COCK. [6 entries.]

(£1 10s.)—JAMES FRAYN.

(15s.)—JOHN FRAYN.

(5s.)—W. BRENT.

—H. J. GIBBS.

CLASS 44.—INDIAN GAME, HEN. [7 entries.]

(£1 10s.)—JOHN FRAYN.

(15s.)—JAMES FRAYN.

(5s.)—W. BRENT.

C.—H. J. GIBBS.

CLASS 45.—MALAYS, COCK. [3 entries.]

£1 10s.)—JOHN FRAYN.

(15s.)—F. G. BALE.

C.—J. C. HUXTABLE.

CLASS 46.—MALAYS, HEN. [4 entries.]

£1 10s.)—JOHN FRAYN.

(15s.)—J. C. HUXTABLE.

—W. SHAPLAND.

47.—FRENCH FOWL (HOUDAN, CRÈVE, LA FLÈCHE, OR ANY OTHER BREED), COCK. [5 entries.]

£1 10s.)—S. W. THOMAS, *Crève*.

(15s.)—MRS. C. HILL, *Houdan*.

C.—P. HANSON, *Houdan*:—J. HILL, *Houdan*:—and S. W. THOMAS, *n*.

48.—FRENCH FOWL (HOUDAN, CRÈVE, LA FLÈCHE, OR ANY OTHER BREED), HEN. [5 entries.]

£1 10s.)—MRS. C. HILL, *Houdan*.

(15s.)—S. W. THOMAS, *Crève*.

C.—P. HANSON.

C.—J. HILL, *Houdan*:—and S. W. THOMAS, *Houdan*.

CLASS 49.—ANY OTHER DISTINCT VARIETY (NOT PREVIOUSLY MENTIONED), COCK. [6 entries.]

I. (£1 10s.)—J. PARTINGTON, *Polish*.

II. (15s.)—D. W. LEWIS.

III. (5s.)—F. PORTER, *Andalusian*.

CLASS 50.—ANY OTHER DISTINCT VARIETY (NOT PREVIOUSLY MENTIONED), HEN. [4 entries.]

I. (£1 10s.)—MALLISON and BALSHAW, *Silver Poland*.

II. (15s.)—F. PORTER, *Andalusian*.

CHICKENS OF 1896.

CLASS 51.—COCHIN, BRAHMA, LANGSHAN, PLYMOUTH ROCK, WYANDOTTE, OR ORPINGTON, COCKEREL. [6 entries.]

I. (£1 10s.)—W. and A. ABBISS, *Orpington*, 21 w.

II. (15s.)—BOADEN and THOMAS, *Wyandotte*, Jan.

III. (5s.)—Mrs. R. HOLLAND, Jan. 3rd.

CLASS 52.—COCHIN, BRAHMA, LANGSHAN, PLYMOUTH ROCK, WYANDOTTE, OR ORPINGTON, PULLET. [9 entries.]

I. (£1 10s.)—P. L. BENSON, M.D., *dark Brahma*, 4½ m.

II. (15s.)—W. HOLMAN, *Silver Wyandotte*, 4 m.

III. (5s.)—Mrs. R. HOLLAND, Jan. 30th.

V. H. C.—J. REEVES.

H. C.—BOADEN and THOMAS. Jan.:—L. and T. FAWKES, *Orpington*, 4½ m.:—and MANOR POULTRY FARM.

CLASS 53.—SPANISH, MINORCA, LEGHORN, HAMBURG, OR FRENCH FOWL, COCKEREL. [9 entries.]

I. (£1 10s.)—A. LEWIS.

II. (15s.)—H. HYDE, *Spanish*, 17 w.

III. (5s.)—Mrs. SINKINS, *white Leghorn*, 4½ m.

H. C.—L. and T. FAWKES, *Minorca*, 4½ m.:—and Mrs. C. HILL, *Houdan*, 5 m.

CLASS 54.—SPANISH, MINORCA, LEGHORN, HAMBURG, OR FRENCH FOWL, PULLET. [7 entries.]

I. (£1 10s.)—Mrs. C. HILL, *Houdan*, 5 m.

II. (15s.)—M. JACKSON, 17 w.

III. (5s.)—MOGRIDGE BROS., *white Leghorn*, Jan. 3rd.

H. C.—H. HYDE, *Spanish*, 17 w.:—and L. and T. FAWKES, *Minorca*, 4½ m.

CLASS 55.—DORKING, GAME, MALAY, OR ANY OTHER VARIETY COCKEREL. [5 entries.]

I. (£1 10s.)—JAMES FRAYN, *Indian Game*.

II. (15s.)—F. G. BALE, *Malay*, Jan. 2nd.

II. (5s.)—JOHN FRAYN, *Indian Game*.

L C.—W. H. SNELL, *Black Red Game*, 4½ m.

ss 56.—DORKING, GAME, MALAY, OR ANY OTHER VARIETY, PULLET. [4 entries.]

(£1 10s.)—JOHN FRAYN, *Indian Game*.

CHICKENS OF 1896 FOR TABLE.

CLASS 57.—ANY PURE BRED, TWO COCKERELS. [5 entries.]

(£1 10s.)—G. P. MEAD, *Dorkings*, 4 m.

. (15s.)—W. BRENT, *Indian Game*.

. C.—J. BLUNDELL, *Silver-grey Dorkings*, 4 m.:—W. E. DAINTON, *South Rocks*, hatched Feb. 7th:—and W. F. EVELYN, *Indian Game*, hatched Jan. 4th.

CLASS 58.—ANY PURE BREED, TWO PULLETS. [4 entries.]

(£1 10s.)—G. P. MEAD, *Dorkings*, 4 m.

. (15s.)—W. BRENT, *Indian Game*.

—W. E. DAINTON, *Plymouth Rocks*, hatched Feb.

s 59.—CROSS BREEDS (DORKING AND INDIAN OR OLD ENGLISH GAME), TWO COCKERELS. [3 entries.]

(£1 10s.)—H. HILL, *Indian Game-Dorking*, hatched March 4th.

(15s.)—MANOR POULTRY FARM, *Indian Game-Dorking*.

C.—G. P. MEAD, *Dorking-Old English*, 4 m.

s 60.—CROSS BREEDS (DORKING AND INDIAN OR OLD ENGLISH GAME), TWO PULLETS. [4 entries.]

(£1 10s.)—MANOR POULTRY FARM, *Indian Game-Dorking*.

(15s.)—D. MATHER, *Indian Game-Dorking*, 4 m., 3 w.

C.—Miss M. DOLBEN, *Dorking-Indian Game*, 4½ m.

s 61.—ANY OTHER DISTINCT CROSS (BREEDS TO BE NAMED), TWO COCKERELS.

[No ENTRY.]

. 62.—ANY OTHER DISTINCT CROSS (BREEDS TO BE NAMED), TWO PULLETS.

[No ENTRY.]

SELLING CLASSES.

63.—ANY DISTINCT BREED, COCK (PRICE NOT TO EXCEED £1 1s.). [21 entries.]

£1 10s.)—J. COOMBS.

(15s.)—A. LUCKIN, *Dorking*.

. (5s.)—S. W. THOMAS.

C.—J. COCK, *Indian Game*:—J. H. DAVIS, *Plymouth Rock*:—BLE:—G. JENNINGS, *Langshan*:—and H. WEEDON, *Plymouth Rock*.

CLASS 64.—ANY DISTINCT BREED, HEN (PRICE NOT TO EXCEED £1 1s.).
[20 entries.]

I. (£1 10s.)—J. H. DAVIS, *Plymouth Rock*.

II. (15s.)—BOSLEY and LAYTON, *Light Brahma*.

III. (5s.)—H. CONNOR, *Black Hamburg*.

H. C.—W. E. DAINTON, *Plymouth Rock*:—G. DOBLE:—H. HILL, *Indian Game*:—and W. SNELL, *Partridge Cochin*.

C.—F. STOODLEY, *Wyandotte*:—S. W. THOMAS:—and J. WALKER, *Buff Cochin*.

BANTAMS.

CLASS 65.—BANTAMS (BLACK OR WHITE), COCK. [11 entries.]

I. (£1.)—G. PODGER, *black*.

II. (10s.)—H. HYDE, *black*.

III. (5s.)—R. BROWN, *white*.

V. H. C.—T. ETTE, *black*.

CLASS 66.—BANTAMS (BLACK OR WHITE), HEN. [13 entries.]

I. (£1.)—O. E. CRESSWELL, *white*.

M. (10s.)—T. ETTE, *black*.

III. (5s.)—H. HYDE, *black*.

H. C.—R. BROWN, *white*:—G. PODGER, *black*:—and H. RODWELL, *black*.

CLASS 67.—BANTAMS (GAME, ANY VARIETY), COCK. [8 entries.]

I. (£1.)—R. J. HUGHES.

II. (10s.)—LADY ALINGTON.

III. (5s.)—MRS. M. B. WILLIAMS.

H. C.—J. C. HUXTABLE:—and R. WINGFIELD.

CLASS 68.—BANTAMS (GAME, ANY VARIETY), HEN. [4 entries.]

I. (£1.)—LADY ALINGTON.

II. (10s.)—J. WEAVER.

H. C.—J. COOMS.

CLASS 69.—BANTAMS (ANY OTHER DISTINCT VARIETY), COCK. [9 entries.]

I. (£1.)—H. CONNOR, *white Japanese*.

II. (10s.)—LADY ALINGTON.

III. (5s.)—M. LENO, *Sebright*.

H. C.—O. E. CRESSWELL, *Japanese*.

C.—J. COOMS.

CLASS 70.—BANTAMS (ANY OTHER DISTINCT VARIETY), HEN.
[11 entries.]

I. (£1.)—O. E. CRESSWELL, *Japanese*.

II. (10s.)—J. COOMS.

II (5s.)—O. E. CRESSWELL, *Tailless*.

V. H. C.—LADY ALINGTON :—and M. LENO, *Sebright*.

H. C.—E. SPARY, *Gold Sebright*.

DUCKS, GEESE, AND TURKEYS.

CLASS 71.—DRAKE OR DUCK (AYLESBURY). [3 entries.]

I. (£1 10s.)—S. BROWN.

II (15s.)—F. READ.

CLASS 72.—DRAKE OR DUCK (ROUEN). [9 entries.]

I (£1 10s.)—HUNTLEY and PICKARD.

II (£15s.)—W. BYGOTT.

III. (5s.)—BOADEN and THOMAS.

H. C.—BOADEN and THOMAS :—and J. PARTINGTON.

CLASS 73.—DRAKE OR DUCK (PEKIN). [6 entries.]

I. (£1 10s.)—J. F. HILL.

II. (15s.)—T. ALLEN.

III. (5s.)—S. BROWN.

H. C.—WITHERS and BERRIDGE.

CLASS 74.—COUPLE OF DUCKLINGS (FOR TABLE). [5 entries.]

I. (£1 10s.)—W. BYGOTT, 12 w.

II. (15s.)—H. HILL, *Aylesbury*, hatched March 26th.

C.—H. T. GOODENOUGH, *Aylesbury*, March 27th :—and H. T. GOOD-
ENOUGH, *Aylesbury*, March 27th.

CLASS 75.—GANDER OR GOOSH. [3 entries.]

I. (£1 10s.)—W. E. DAINTON.

II. (15s.)—H. T. GOODENOUGH.

H. C.—H. HOW.

CLASS 76.—TURKEYS, COCK. [4 entries.]

I. (£1 10s.)—W. STANFORD.

II. (15s.)—H. T. GOODENOUGH.

H. C.—H. T. GOODENOUGH :—and J. F. HILL.

CLASS 77.—TURKEYS, HEN. [1 entry.]

I. (£1 10s.)—H. T. GOODENOUGH.

BATH AND WEST AND SOUTHERN COUNTIES SOCIETY.
ART UNION HELD AT ST. ALBANS, MAY 30, 1896.

Prize Ticket.	Value of Prize.	Prize Winner.	Winner's Address.	Name of Picture.	Artist.	Price of Picture.
125	£ 15 15	J. Robards ..	Beech Hyde, near St. Albans	St. Albans Abbey ..	H. Hine ..	£ 15 0 0
685	10 10	H. Page ..	Queen's Road, Hertford ..	A Freshet in the Lleir Valley	W. H. Mander ..	10 0 0
140	10 10	C. I. Renouf ..	Jersey House, Yecovil ..	{ Cattle Brenton, Sunset A Sussex Stream	{ W. V. Tippet .. Miss A. K. Meadows .. W. R. Cooper ..	{ 8 0 0 2 2 0 5 5 0
185	10 0	W. H. Morris ..	{ Care of Messrs. Fuller and Hick, Broad Street, Bath .. }	In the Highlands ..	W. L. Turner ..	12 12 0
221	10 0	— Smale ..	1, Topsham Road, Exeter ..	Waiting the Tide ..	R. W. Allan ..	10 0 0
679	5 5	Mrs. E. Kidner ..	{ The Manor House, Cothel- stone, Taunton }	Essex Uplands ..	W. Ball ..	5 5 0
503	5 5	G. H. Tucker ..	4, Prince's Buildings, Bath ..	Sailing the Boat ..	J. J. Barker ..	8 8 0
774	5 5	Unclaimed ..	.. ..	Lowestoft Trawlers	R. W. Vernon ..	5 5 0
799	5 5	Miss Butcher ..	{ 15, Queen Square, High Weycombe }	On the Llugwy ..	W. H. Mander ..	5 0 0
843	5 5	A. E. Taylor ..	32, Currie Street, Hertford ..	Wild Flowers ..	Miss M. F. W. Gilbert	5 5 0
95	5 5	Miss Mason ..	North Hill, Swansea ..	A Surrey Common	W. Ball ..	5 5 0
798	5 0	J. B. King ..	North: Stoke, Wallingford ..	At Tyn-y-Croes ..	W. H. Mander ..	5 0 0

Prizes in Art Union.

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788	5 0	J. Shields ..	31, Albion Road, London, N.	A Worcestershire Cottage ..	E. Walters ..	5 0 0
1,094	5 0	J. Hampson ..	{ Imperial Park, Bersion, } { Notts. }	{ Cottage, near Colwyn Bay, } { N. Wales }	Mrs. F. E. Pike ..	5 0 0
1,064	4 4	Miss S. P. Moffatt	{ Holy Trinity Vicarage, Black- } { burn }	Dartmoor, near Chagford ..	W. S. Morrish ..	4 4 0
277	4 4	E. J. B. Mercer ..	32, Morford Street, Bath ..	In the Highlands	O. Hicks	4 4 0
96	4 4	C. Barfoot ..	Diss, Norfolk	Low Tide, Scarborough ..	W. A. Thornbery ..	4 4 0
665	4 4	Mrs. E. Kidner ..	{ The Manor House, Cottel- } { stone, Taunton }	Top of the Street, Clovelly ..	F. Althaus	4 4 0
1,076	3 3	Mrs. Hodding ..	{ Clarendon, Northwood, Milt- } { dlesex }	Cattle on the Moor	W. S. Morrish ..	3 10 0
272	3 3	E. J. B. Mercer ..	32, Morford Street, Bath ..	At Padstow	A. P. Codd	3 3 0
8	3 3	W. W. Hoare ..	{ Victoria Villa, Marlborough } { Road, St. Albans }	Redbourn, Herts	F. G. Kitton	3 3 0
712	3 3	J. H. Unwin ..	{ 81, High Street, Maldon, } { Essex }	Fresh Gathered	Miss M. F. W. Gilbert	3 3 0
975	2 2	C. Wickatced ..	Kettering	Portrait Charnante	Miss J. Mongrédon	2 2 0
1,107	2 2	E. J. Willenolt ..	Yew Tree House, Harpenden	St. Albans Abbey	Miss M. de Putron	2 2 0
1,005	2 2	W. H. Box ..	{ 7, Minet Gardens, Minet } { Avenue, Willesdon, Lon- } { don, N.W. }	A Maiden All Forlorn ..	Miss F. P. Goody ..	2 2 0
1,175	2 2	T. Hosier ..	Verulam Road, St. Albans ..	Bodinnick, near Fowey ..	Miss A. K. Meadows	2 2 0
321	2 2	H. Constance ..	{ Beethoren House, Grosvenor } { Street, Cheltenham }	Primulas	Miss Ham	2 2 0

Bath and West and Southern Counties Society.

OBJECTS OF THE SOCIETY AND PRIVILEGES OF MEMBERSHIP.

ANNUAL EXHIBITIONS.

The Society annually holds an Exhibition in some city or town in England or Wales. Each section of the Society's district is visited at intervals, so that most Members have an opportunity of seeing the Show in their own neighbourhood every few years. Prizes to a large amount are given for Horses, Cattle, Sheep, Pigs, Farm Produce, &c. Provision is also made for the exhibition of Agricultural Implements and Machinery, Seeds, Cattle Foods, Artificial Manures, and articles of general utility. A substantially-built and completely-equipped Working-Dairy on a large scale is a special feature of these Exhibitions. Here explanatory demonstrations, and comparative tests of implements and processes are carried on with the assistance of well-known practical and scientific experts, and Butter-making Competitions for valuable prizes are held. Among other features of the Annual Meeting are Shoeing, Shearing and Milking Competitions, Poultry and Horticultural Shows, and Exhibitions illustrative of Bee-keeping, Home Industries, Art-Manufactures, and the Fine Arts.

Membership entitles to free admission to the Annual Exhibition, and also to the Grand Stand overlooking the Horse and Cattle Ring, to the Reserved Seats in the Working Dairy, and to the use of the Members' Special Pavilion for Reading, Writing, &c.

Entries can be made by Members (elected on or before the last Tuesday in January preceding the Show) at 10s. per entry for Horses, and 5s. per entry for Cattle, Sheep, and Pigs. Non-Members are required to pay £1 per entry for Horses and 15s. per entry for the other Stock named. Similar reductions in the Fees in the Farm Produce and other Classes are made to Members.

THE JOURNAL.

All Members receive free of charge the Society's Journal, which is published annually, bound in cloth. It has for its aim the dissemination of agricultural knowledge in a popular form, and in addition to original articles by well-known agricultural authorities, it contains particulars of the Society's general operations, full reports of its experimental and research work, prize awards, financial statements, lists of Members, reviews of new books on agriculture, &c. (The price of the Journal to non-Members is 6s. 5d. post free.)

CHEMICAL AND BOTANICAL FACILITIES.

The Society has a Consulting Chemist (Dr. J. A. Voelcker, M.A., F.I.C., &c.) and a Consulting Botanist (Mr. W. Carruthers, F.R.S.), from whom Members can obtain analyses and reports at reduced rates of charge.

EXPERIMENTS.

Experiments on Crops are conducted at experimental stations in various parts of the kingdom, and Members are enabled to take part in these and to receive reports thereon.

The Society has also an experimental station and laboratory attached to it

cheese School, and a similar department for carrying on researches in connection with Cider-making. Here systematic investigations are conducted by a scientific staff, acting in conjunction with practical experts, *detailed reports of which are furnished to Members.*

TECHNICAL EDUCATION.

The Society has a Butter School, fully equipped with competent teachers, and, &c., wherein daily instruction is given to Students. The School is at present travelling in Devon under an arrangement with the Devon County Council. The Society has also a fixed Cheese School in Somerset, where students are received and boarded. Both the Butter and Cheese Schools are under the inspection of the Board of Agriculture, which has shown its appreciation of the work by substantial grants in aid. *Members are admitted free to witness the Teaching and Competitions at any of the Society's Dairy Schools.*

The Society has also a Travelling Farriery School for promoting improvement in the Shoeing of Horses.

FINE ART AND ART-MANUFACTURES.

One of the objects for which the Society was founded was the encouragement of Arts as well as Agriculture, and, to this end, exhibitions of Paintings and Art-Manufactures are annually held. The special aims of the Society in maintaining this department are:—1st. The encouragement of young artists, specially, and of local efforts to bring art-workmanship to bear in the production of decorative or useful articles. 2nd. The exhibition of such art treasures as there may be in private or other collections, to which the public, ordinarily, have no access. No charge is made to Artists for the exhibitions of their Paintings, and, in order to promote the sale of meritorious works, an Art Union is held, the prizes for which are selected from the Pictures exhibited, a large sum being annually voted by the Society towards their purchase.

TERMS OF MEMBERSHIP.

ANNUAL SUBSCRIPTIONS.

Ordinary Members, not less than	£1
Tenant Farmers, the rateable value of whose holdings does not exceed £200 a-year, not less than	10/-

Governors, who are eligible for election as President or Vice-President, and who subscribe not less than £2, are entitled, in addition to the privileges already mentioned, to an extra Season Ticket for the Annual Exhibition and to the Grand Stand, &c. Governors subscribing more than £2 are entitled to a further ticket for every additional £1 subscribed.

Members subscribing less than £1 are entitled to all the privileges of Membership except that of entering Stock at reduced fees, and their admission Ticket for the Annual Show is available for *one day only* instead of for the whole time of the Exhibition.

LIFE COMPOSITIONS.

Governors may compound for their Subscriptions for future years by payment, in advance, of £20; and Members by payment, in advance, of £10. Governors and Members who have subscribed for 20 years may become Life-Members on payment of half these amounts.

Any person desirous of joining the Society can be proposed by a Member, or by

THOS. F. PLOWMAN,
Secretary and Editor,

4, Terrace Walk, Bath.

Telegraphic Address:—"PLOWMAN, BATH."

Bath and West and Southern Counties Society.

GENERAL LAWS,

As revised in accordance with the Report of a Special Committee; which Report was received and adopted by the Annual General Meeting of Members, held on May 30, 1895.

COMPOSITION OF THE SOCIETY.

I. The Society shall consist of a President, Vice-Presidents, Trustees, Council, Treasurer, Secretary, and Members.

OBJECTS.

II. The Society shall have the following objects:—

- a. To hold Exhibitions of breeding stock, agricultural implements, and such other articles connected with agriculture, arts, manufactures or commerce as may be determined upon by the Council.
- b. To conduct practical and scientific investigations in agriculture.
- c. To promote technical education in agriculture by providing means of systematic instruction.
- d. To publish a Journal for circulation.

SUBSCRIPTIONS.

III. The Annual Subscriptions for Members shall be as follows:—

Governors (who are eligible for election as President or Vice-President) not less than	£2
Ordinary Members, not less than	£1
Tenant Farmers (the rateable value of whose holding does not exceed £200 a-year) not less than	10/-

IV. The payment of £20 in one sum shall constitute a Governor for life, and of £10 in one sum an Ordinary Member for life; but any Governor who has subscribed not less than £2 annually for a period of twenty years may become a life Governor on the further payment of £10 in one sum; and any Ordinary Member, who has subscribed not less than £1 annually for the same period, may become a life-Member on the further payment of £5 in one sum.

V. Subscriptions shall become due and be payable in advance on the 1st of January in each year or as soon as the Subscriber has been elected a Member. When the election takes place during the last quarter of the year the subscription payable on election will be considered as applying to the ensuing year.

VI. A Member shall be liable to pay his subscription for the current year unless he shall have given notice, in writing, to the Secretary before January 1st of his intention to withdraw.

GOVERNING BODY.

VII. The entire management of the Society—including the making of By-laws, election of Members, determining the Prizes to be awarded, appointing Committees, fixing the Places of Meetings and Exhibitions, appointing or removing the Treasurer, Secretary, and such other officers as may be required to carry on

business of the Society—shall be vested in the Council, who shall report its findings at the annual meetings of the Society.

I. The Council shall consist of the Patron (if any), President, Vice-Presidents, Trustees, and Treasurer (who shall be *ex-officio* Members), and of sixty-six Members.

SECTION OF PRESIDENT, VICE-PRESIDENTS, TRUSTEES, AND COUNCIL.

The election of a President for the year, of any additional Vice-Presidents, and of the Members of Council representing the Divisions named in X., shall take place at the Annual Meeting of the Society, and they shall into office at the conclusion of the Exhibition during which such Annual Meeting has been held.

The sixty-six Members of the Council referred to in Laws VIII. and IX. consist of fifty-eight persons residing or representing property in the following Divisions, viz. :—

- 'twelve from the Counties of Devon and Cornwall, which shall be called the Western Division;
- 'twenty-four from the Counties of Somerset, Dorset, and Wilts, which shall be called the Central Division;
- 'twelve from the Counties of Hants, Berks, Oxon, Bucks, Middlesex, Surrey, Sussex, and Kent, which shall be called the Southern Division; and
- 'ten from the Counties of Worcester, Gloucester, Hereford and Monmouth, and the Principality of Wales, which shall be called the North-Western Division.

The remaining eight shall be elected (irrespective of locality) from the general body of Members, and shall form a Division which shall be called the "Without District" Division.

One half of the elected Members in each of the five Divisions named in X. shall retire annually by rotation, but shall be eligible for re-election.

II. The Council shall have power to nominate a President, Vice-Presidents, Trustees, and Members of Council for the approval of the annual meeting, and to fill up such vacancies in their own body as are left after the annual meeting, and may from time to time occur during the interval between the annual meetings.

III. Nominations to offices, election to which is vested in the whole body of Members, must reach the Secretary ten days before the meeting, at which such offices are to be filled up.

MEETINGS.

V. The annual meeting of the Society shall take place during the holding of the annual Exhibition.

VI. Special general meetings of the Society may be convened by the President on the written requisition of not less than three Members of Council; and all Members shall have ten days' notice of the object for which they are called together.

VII. No Member of less than three months' standing, or whose subscription is in arrears, shall be entitled to vote at a meeting.

EXHIBITIONS.

II. The annual Exhibitions of the Society shall be held in different Cities or Towns in successive years.

III. All Exhibitors shall pay such fees as may be fixed by the Council. Members subscribing not less than £1 per annum, who have been elected previous to January 1st, and have paid the subscription for the current year, shall be entitled to exhibit at such reduction in these fees as the Council shall determine.

PRIZES.

XIX. All prizes offered at the cost of the Society shall be open for competition to the United Kingdom.

XX. No person intending to compete for any prize offered at the annual Exhibition shall be eligible to act as a judge or to have any voice in the selection of judges to award the premiums in the department in which he exhibits.

XXI. If it be proved to the satisfaction of the Council that any person has attempted to gain a prize in this, or in any other Society, by a false certificate or by a misrepresentation of any kind, such person shall thereupon be for the future excluded from exhibiting in this Society.

JOURNAL.

XXII. The Proceedings of the Society, Awards of Prizes, Financial Statements, and List of Officers, Governors and Members shall be printed annually in the Society's Journal, and every Governor and Member, not in arrear with his subscription, shall be entitled to receive one copy, free of expense, and there shall be an additional number printed for sale.

POLITICS.

XXIII. No subject or question of a political tendency shall be introduced at any meeting of this Society.

ALTERATIONS IN LAWS.

XXIV. No new General Law shall be made or existing one altered, added to or rescinded, except at an annual or special general meeting, and then only provided that a statement of particulars, in writing, shall have been sent to the Secretary at least twenty-one days previous to the meeting at which the question is to be considered.

List of Officers

1896-97.

SOUTHAMPTON M

PATRON.

HIS ROYAL HIGHNESS THE PRINCE

PRESIDENT FOR

THE RIGHT HON. LORD MONTAGU OF

TRUSTEES.

- *ACLAND, THE RIGHT HON. SIR THOMAS DYK
- PAGET, THE RIGHT HON. SIR RICHARD H
- Shepton Mallet.
- LENNARD, SIR JOHN FARNABY, Bart., Wick

VICE-PRESIDENTS

- YORK, H.R.H. THE DUKE OF, K.G. Y
- *ACLAND, RIGHT HON. SIR T. D., Bart. K
- ACLAND, C. T. D. H
- *AMHERST, EARL
- BATH, MARQUESS OF. L
- BELFIELD, JOHN P
- *BENYON, RICHARD E
- BRYMER, W. E., M.P. H
- *CARLINGFORD, LORD
- *CLARENDON, EARL OF T
- *CLINTON, LORD H
- *CORK AND ORRERY, EARL OF M
- *COVENTRY, EARL OF C
- DAW, R. R. M. S
- DEVONSHIRE, DUKE OF, K.G. C
- DIGBY, G. D. W. S
- *DUCIE, EARL OF T
- *FORTESCUE, EARL C
- GIBBS, A. T
- GORING, REV. J. W
- HIPPESLEY, J. H. S
- HULSE, SIR E., Bart. B
- *ILCHESTER, EARL OF
- *JERSEY, EARL OF B
- KNYFTON, T. TUTTON U
- *LANSDOWNE, MARQUESS OF, K.G. B
- LECONFIELD, LORD P
- LENNARD, SIR J. F., Bart. W
- *LLEWELYN, SIR J. T. D., Bart., M.P. P
- *LOPES, SIR M., Bart.
- LOYD, LEWIS B
- MILDMAY, SIR H. ST. JOHN, Bart. D

*. * Those to whose names an asterisk (*) is prefixed by

VICE-PRESIDENTS—*continued.*

MOORE-STEVENS, J. C.	Win-cott, Great Torrington
MORETON, LORD.	Sarsden House, Chipping Norton
*MORLEY, EARL OF	Saltram, Plympton, Devon
MORRELL, G. HERBERT, M.P.	Headington Hill Hall, Oxford
*MOUNT-EDGCUMBE, EARL OF	Mount Edgcumbe, Devonport
NEVILLE-GRENVILLE, R.	Butleigh Court, Glastonbury
NORTHUMBERLAND, DUKE OF	Albury Park, Guildford
*ONSLOW, EARL OF	7, Whitehall Place, London, S.W.
PAGET, THE RIGHT HON. SIR R. H., Bart.	Cranmore Hall, Shepton Mallet
PINNEY, W.	Somerton
POLTIMORE, LORD	Poltimore, Exeter [Han
PORTAL, MELVILLE	Laverstock House, Micheldever,
SAINT GERMANS, EARL OF	Port Elliot, Devonport
SOMERSET, DUKE OF	Marden Bradley, Bath
STORY-MASKELYNE, N.	Basset Down House, Swindon
STUCLEY, SIR G. S., Bart.	Moreton, Bideford, N. Devon
*TEMPLE, EARL	Newton Park, Bath.
THYNNE, LORD HENRY	Muntham, Worthing
*TREDEGAR, LORD	Tredegar Park, Newport, Monmou
*TREMAYNE, JOHN	Heligan, St. Austell
WALROND, SIR W. H., Bart., M.P.	Bradfield, Cullompton
*WARWICK, EARL OF	Warwick Castle
WINCHESTER, MARQUESS OF	Amport St. Mary's, Andover
WINDSOR, LORD	Hewell Grange, Bromsgrove

THE LORD WARDEN OF THE STANNARIES.

THE SURVEYOR-GENERAL OF THE DUCHY OF CORNWALL.

THE RECEIVER-GENERAL OF THE DUCHY OF CORNWALL.

. Those to whose names an asterisk (*) is prefixed have filled the office of President.

MEMBERS OF COUNCIL.

EX-OFFICIO MEMBERS.

THE PRESIDENT.
THE VICE-PRESIDENTS.

THE TREASURER.
THE CONSULTING SURVEYOR.

ELECTED MEMBERS.

WESTERN DIVISION (DEVON AND CORNWALL).

(*12 Representatives.)

Elected in 1895:—		Elected in 1896:—	
<i>me.</i>	<i>Address.</i>	<i>Name.</i>	<i>Address.</i>
. W. . .	Bampfylde House, Exeter	COLLINS, C. R. . .	Hartwell House, Exeter
. J. . .	Stoke House, Exeter	MARKER, R. . . .	Combe, Honiton
A. O. .	Coombe, Copplestone	SMELLEY, SIR J., Bt.	Shubrooke Park, Crediton
. P. . .	Merafield, Plympton	WILLIAMS, SIR W. R.,	
		Hart	Heanton, Barnstaple
		WITKELL, R. . . .	Rudway, Thorverton
		WYATT-EDGEHILL, COL. A.	Cowley Place, Exeter

CENTRAL DIVISION (SOMERSET, DORSET, AND WILTS).

(*24 Representatives.)

J. . .	Middlehill House, Box, Wills	ALLEN, J. D. . .	Springfield House, Shepton Mallet [Salisbury]
V. L. .	Quarme, Dunster	BEST, COL. G. . .	Charlton House, Ludwell
K. W.,	Sherborne Castle, Sherborne	FOX-CROFT, E. T. D.	Hinton Charterhouse, Bath
. . .	Long Ashton Lodge, Clifton	GIBSON, J. T. . .	Hayter Lodge, Langford, R.S.O., Somerset
L. F. .	The Court, Axbridge, Somerset	HOBHOUSE, H., M.P.	Hadspen House, Castle Cary
. G. . .	11, Laura Place, Bath	LLEWELLYN, E. H.,	Langford Court, Langford, M.P.
. H. . .	Claremont, Taunton	MAULE, M. ST. J. .	Chapel House, Bath
. . .	Tunley Farm, near Bath	NEELD, SIR A. W.,	Bart.
A. AC-	St. Audries, Bridgwater	GRITTLETON, CHIPPENHAM	
rt., M.P.	Nyncehead, Wellington, Somerset	NAPIER, H. B. . .	Chippenham
. C. A. .	Pound, Bishop's Lydeard	SHERSTON, MAJOR C. D.	Everceech, Bath
. C. . .		SHRINE, COL. H. M.,	Warleigh Manor, Bath
		WILLIAMS, E. W. . .	Herrington, Dorchester

EASTERN DIVISION (HANTS, BERKS, OXON, BUCKS, MIDDLESEX, SURREY, SUSSEX, AND KENT).

(12 Representatives.)

W. . .	13, The Waldrons, Croydon	DRUCE, A. F. M. . .	Bladon House, Woodstock
apt. W. J. C.	The Elms, Taplow [don	KNOLLYS, C. R. . .	Grange Cottage, Alresford, Hants
. M., F.S.A.	Richmond, Surrey		
. . .	Beaufort House, Winchester	STANFORD, A. . .	Eatons, Steyning
. . .	Grosvenor House, Stockbridge, Hants	WARRE, F. . . .	44, Great Ormond Street, Bloomsbury, London
J. . .	Kidmore Grange, Caversham, Oxon	WHITEHEAD, C. F. L. S.	Barming House, Maidstone
		WILLIAMS, A. G. . .	Portsea, Hants

WESTERN DIVISION (WORCESTERSHIRE, GLOUCESTERSHIRE, HEREFORDSHIRE, MONMOUTHSHIRE, AND WALES).

(10 Representatives.)

E. LLOYD-	Hardwicke Court, Gloucester	ARNWRIGHT, J. H. .	Hampton Court, Leominster [Severn]
. J. C. .	Vivod, Llangollen	MARTIN, G. E. . .	Hani Court, Upton-on-Avon
. . .	Worcester	MASON, A. . . .	North Hill, Swansea
V. . .	Thinghill Court, Hereford	PHILLIPS, C. D. . .	Newport, Mon. [Mon.]
W. . .	Showle Court, Ledbury	STRETTON, R. . . .	The Duffryn, Newport

WITHOUT REFERENCE TO DISTRICT DIVISION.

(8 Representatives.)

. . .	Higham, Kent	BEST, CAPT. T. G. .	Dean House, Whitchurch, Hants
. W. D. .	50, Queen's Gate Terrace, London [Warwick]	GORING, C. . . .	Wiston Park, Steyning
WARD P.	Moxhall Park, Erdington	LATHAM, T. . . .	Dorchester, Oxon
. A. H. .	46, Earl Street, Maldstone		

Up to recent deaths, there are at the present time two vacancies in the Western and one vacancy each in the Central and Without Reference to District Divisions.

STANDING COMMITTEES, 1896-97.[The PRESIDENT is *ex-officio* Member of all Committees.]**AGRICULTURAL EDUCATION.**PAGET, RIGHT HON. SIR R. H., Bart., *Chairman.*

ACLAND, RT. HON. SIR T. D., Bart.	EDWARDS, C. L. F.	LATHAM, T.
ACLAND, C. T. D.	GIBBONS, G.	LENNARD, SIR J. F., Bart.
ALLEN, J. D.	GORING, REV. J.	LLEWELLYN, E. H. (M.P.)
BEST, COL. G.	HOBHOUSE, H. (M.P.)	MASKELYNE, N. STORY-
	KNOLLYS, C. R.	SUTTON, M. J.

(With power to add to their number.)

ALLOTMENT.BEST, CAPT. J. C., *Chairman.*

BOTELER, CAPT. W. J. C.	LLEWELLYN, E. H. (M.P.)	NEVILLE-GRENVILLE, R.
EDWARDS, C. L. F.	NAPIER, H. B.	SHELLEY, SIR J., Bart.
GIBBONS, G.		

ARTS AND MANUFACTURES.ACLAND, RIGHT HON. SIR T. D., Bart., *Chairman.*WYATT-EDGEELL, COL. A., *Vice-Chairman.*

ACLAND, C. T. D.	DAW, K. R. M.	MORRELL, G. H. (M.P.)
BATH, MARQUESS OF	FARWELL, F. G.	NAPIER, COL. W. D.
CUNDALL, H. M. (F.S.A.)	MOORE-STEVENS, J. C.	WILLIAMS, E. W.

(With power to add to their number.)

CONTRACTS AND REFRESHMENTS.BEST, CAPT. J. C., *Chairman.*

BOTELER, CAPT. W. J. C.	MASON, A.	NEVILLE-GRENVILLE, R.
EDWARDS, C. L. F.	NAPIER, H. B.	SANFORD, E. C. A.
LLEWELLYN, E. H. (M.P.)		

DAIRY.ACLAND, C. T. D., *Chairman.*

ACLAND, RT. HON. SIR T. D., Bart.	GIBBONS, G.	NEVILLE-GRENVILLE, R.
ALLEN, J. D.	KNOLLYS, C. R.	PAGET, RT. HON. SIR R. H., Bart.
ASHCROFT, W.	LATHAM, T.	SANFORD, E. C. A.
EDWARDS, C. L. F.	LENNARD, SIR J. F., Bart.	WIPPELL, R.
FOWLER, W. H.	MASKELYNE, N. STORY-	
	NAPIER, H. B.	

DISQUALIFYING.

THE STEWARDS OF HORSES.

THE STEWARDS OF STOCK.

THE STEWARDS OF POULTRY.

EXPERIMENTAL.ACLAND, RIGHT HON. SIR T. D., Bart., *Chairman.*

ACLAND, C. T. D.	GIBBONS, G.	NEVILLE-GRENVILLE, R.
ALLEN, J. D.	KNOLLYS, C. R.	NAPIER, H. B.
ASHCROFT, W.	LENNARD, SIR J. F., Bart.	PAGET, RT. HON. SIR R. H., Bart.
DYKE, T.	LLEWELLYN, E. H. (M.P.)	SUTTON, M. J.
DRUCE, A. F. M.	MASKELYNE, N. STORY-	
FARWELL, F. G.		

(With power to add to their number.)

FINANCE.JONES, H. P., *Chairman.*

COLLINS, C. R.

MARTIN, G. E.

IMPLEMENT REGULATIONS.BEST, CAPT. J. C., *Chairman.*

ACLAND, C. T. D.	GIBBONS, G.	NAPIER, H. B.
BOTELER, CAPT. W. J. C.	JONES, H. P.	NEVILLE-GRENVILLE, R.
DYKE, T.	LLEWELLYN, E. H. (M.P.)	SHELLEY, SIR J., Bart.
EDWARDS, C. L. F.	MASON, A.	

JOURNAL.

ACLAND, RIGHT HON. SIR T. D., Bart., *Chairman.*
 AND, C. T. D. | DYMOND, F. W. | MARTIN, G. E.

MASKELYNE, N. STORY-

JUDGES' SELECTION.

LENNARD, SIR J. F., Bart., *Chairman.*

N, J. D.	DRUCE, A. F. M.	SILLIFANT, A. O.
COL. G.	GIBBONS, G.	SMITH, J. W.
N, W. J.	MOORE-STEVENS, J. C.	WILLIAMS, E. W.
LEY, W. L.	SHELLEY, SIR J., Bart.	

RAILWAY ARRANGEMENTS AND ADVERTISEMENTS.

BEST, CAPT. J. C., *Chairman.*

IRST, EARL	ILCHESTER EARL OF	MASON, A.
EARL OF	LENNARD, SIR J. F., Bart.	MORLEY, EARL OF
STRY, EARL OF	LOPES, SIR M., Bart.	SHELLEY, SIR J., Bart.
E, A. F. M.		

(With power to add to their number.)

STOCK PRIZE-SHEET.

LENNARD, SIR J. F., Bart., *Chairman.*

N, J. D.	DRUCE, A. F. M.	SHELLEY, SIR J., Bart.
, MARQUESS OF	GIBBONS, G.	SILLIFANT, A. O.
COL. G.	MARKER, R.	STANFORD, A.
N, W. J.	MOORE-STEVENS, J. C.	WILLIAMS, E. W.
ER, T.	SANFORD, E. C. A.	

Stewards.

<i>Arts.</i>	<i>Horses.</i>
CUNDALL, H. M. (F.S.A.)	WILLIAMS, E. W. BEST, COL. G.
FARWELL, F. G.	<i>Horticulture.</i>
<i>Butter Test.</i>	FOWLER, W. H.
BATH, MARQUESS OF.	<i>Music.</i>
<i>Cattle, Sheep and Pigs.</i>	NAPER, COL.
LENNARD, SIR J. F., Bart.	<i>Poultry.</i>
SHELLEY, SIR J., Bart.	SANDERS, E. J.
DRUCE, A. F. M.	<i>Shearing.</i>
<i>Assistant Stewards.</i>	DRUCE, A. F. M.
SILLIFANT, A. O.	<i>Shoeing.</i>
<i>Cider.</i>	LATHAM, T.
FARWELL, F. G.	<i>Working Dairy.</i>
<i>Dairy Schools.</i>	GIBBONS, G. KNOLLYS, C. R.
GIBBONS, G.	<i>Assistant Steward (Milking).</i>
<i>Experiments.</i>	LATHAM, T.
OLLYS, C. R. ASHCROFT, W.	<i>Works.</i>
DYKE, T.	NAPIER, H. B.
<i>Finance.</i>	<i>Yard.</i>
ONES, H. P. COLLINS, C. R.	BEST, CAPT. J. C.
MARTIN, G. E.	EDWARDS, C. L. F.
<i>Forage.</i>	BOTELER, CAPT. W. J. C.
SKINNER, A. C.	<i>Assistant Steward.</i>
	MASON, A.

Other Honorary Officials.

Treasurer—BADCOCK, H. J. | *Local Treasurer*—DYMOND, F. W.
Consulting Surveyor—SPACKMAN, H.

Permanent Staff.

<i>Secretary</i> —PLOWMAN, THOMAS F.	<i>Consulting Botanist.</i>
<i>Associate Editor.</i>	CARRUTHERS, W. (F.R.S.)
MAN, THOS. F. LLOYD, F. J. (F.I.C.)	<i>Veterinary Inspector.</i>
<i>Auditor.</i>	BROWN, PROF. G. T. (C.B.)
MDMAN, A. (<i>Chartered Accountant.</i>)	<i>Superintendent of Works.</i>
<i>Consulting Chemist.</i>	ROSSITER, J.
ELCKER, DR. J. A. (M.A., F.I.C.)	

Members' Privileges.

EXAMINATION OF PLANTS AND SEEDS.

Members of the Bath and West and Southern Counties Society, who may also be Members of other Agricultural Societies, are particularly requested, in applying for Examination of Plants and Seeds, to state that they do so as Members of the first-named Society.

THE Council have arranged for the following rates of charge for the examination, by the Society's Consulting Botanist, of Plants and Seeds for the *bonâ fide* and individual information and benefit of Members of the Society (not being seedsmen). The charge for examination must be paid at the time of application. and the carriage of all parcels must be prepaid.

No.

- 1.—A report on the purity and germinating power of a sample of seed, stating the sorts and amount of any other seeds found therein 1s.
- 2.—Determination of the species of any weed or other plant, or of any epiphyte or vegetable parasite, with a report on its habits, and the means for its extermination or prevention 1s.
- 3.—Report on any disease affecting farm crops 1s.
- 4.—Determination of the species of a collection of natural grasses found in any district, with a report on their habits and pasture value 5s.

N.B.—The Consulting Botanist's Reports on Seeds are furnished to enable Members,—purchasers of seeds and corn for Agricultural or Horticultural purposes,—to test the value of what they buy, and not to be used or made available for advertising or trade purposes.

PURCHASE OF SEEDS.

The purchaser should obtain from the vendor, by invoice or otherwise, a proper designation of the seed he buys, with a guarantee that it contains not more than a specified amount of other seeds, and is free from ergot, or, in the case of clovers, from dodder, and of the percentage of seeds that will germinate.

The germination of cereals, green crops, clover, and timothy grass should be not less than 90 per cent.; of fox-tail not less than 60 per cent.; of other grasses not less than 70 per cent.

The Council strongly recommend that the purchase of prepared mixtures should be avoided, and that the different seeds to be sown should be purchased separately.

INSTRUCTIONS FOR SELECTING AND SENDING SAMPLES.

I. SEEDS.

In sending seed or corn for examination the utmost care must be taken to secure a fair and honest sample. In the case of grass-seeds the sample should be drawn from the centre of the sack or bag, and in all cases from the bulk delivered to the purchaser and not from the purchase sample. When bought by sample, the whole or part of that sample should also be sent.

When it is considered necessary to secure legal evidence, the sample should be taken from the bulk and placed in a sealed bag in the presence of a reliable witness who is acquainted with the identity of the bulk, and care should be taken that the purchased sample and bulk be not tampered with after delivery, or mixed or come in contact with any other sample or stock.

One ounce of grass and other small seeds should be sent, and two ounces of cereals or larger seeds. The exact name under which the seed has been bought should be sent with it.

Grass-seeds should be sent at least FOUR WEEKS, and clover-seeds TWO WEEKS before they are required, and they should not be sown until the report has been received.

II. PLANTS.

In collecting specimens of plants, the whole plant should be taken up, and the earth shaken from the roots. If possible, the plants must be in flower or fruit. They should be packed in a light box, or in a firm paper parcel.

Specimens of diseased plants or of parasites should be forwarded as fresh as possible. They should be placed in a bottle, or packed in tinfoil or oil-silk.

All specimens should be accompanied with a letter specifying the nature of the information required, and stating any local circumstances (soil, situation, &c.) which, in the opinion of the sender, would be likely to throw light on the inquiry.

Parcels or letters containing seeds or plants for examination (carriage or postage prepaid) must be addressed to Mr. W. CARRUTHERS, F.R.S., 43, Central Hill, Norwood, London, S.E.

Members' Privileges.

ANALYSES OF FERTILISERS, FEEDING-STUFFS, WATERS, SOILS, &c.

Applicable only to the case of Persons who are not commercially engaged in the manufacture or sale of any substance sent for Analysis.)

Members of the Bath and West and Southern Counties Society, who may also be Members of other Agricultural Societies, are particularly requested, in applying for Analyses, to state that they do so as Members of the first-named Society.

The Council have fixed the following rates of Charges for Chemical Analysis to Members of the Society.

These privileges are applicable only when the Analyses are for *bona-fide* agricultural purposes, and are required by Members of the Society for their own use and guidance in respect of farms or land in their own occupation and within the United Kingdom.

The analyses are given on the understanding that they are required for the individual and to the benefit of the Member applying for them, and must not be used for other persons, or for commercial purposes.

Land or estate agents, bailiffs, and others, when forwarding samples, are required to state the names of those Members on whose behalf they apply.

Members are also allowed to send for analysis under these privileges any manures or feeding-stuffs to be used by their outgoing tenants, or which are to be given free of cost to their occupying tenants.

The analyses and reports may not be communicated to either vendor or manufacturer, except in cases of dispute.

Members are requested, when applying for an analysis, to quote the number in the subjoined schedule under which they wish it to be made.

1.—An opinion of the purity of bone-dust or oil-cake (each sample)	2s. 6d.
—An analysis of sulphate or muriate of ammonia, or of nitrate of soda, together with an opinion as to whether it be worth the price charged	5s.
—An analysis of guano; showing the proportion of moisture, organic matter, sand, phosphate of lime, alkaline salts and ammonia, together with an opinion as to whether it be worth the price charged	10s.
—An analysis of mineral superphosphate of lime for soluble phosphates only, together with an opinion as to whether it be worth the price charged	5s.
—An analysis of superphosphate of lime, dissolved bones, &c., showing the proportions of moisture, organic matter, sand, soluble and insoluble phosphates, sulphate of lime, and ammonia, together with an opinion as to whether it be worth the price charged	10s.
—An analysis of bone-dust, basic slag, or any other ordinary artificial manure, together with an opinion as to whether it be worth the price charged	10s.
—An analysis of compound artificial manures, animal products, refuse substances used for manure, &c. from 10s. to £1	
—An analysis of limestone, showing the proportion of lime	7s. 6d.
—An analysis of limestone, showing the proportion of lime and magnesia	10s.
—An analysis of limestone or marl, showing the proportion of carbonate, phosphate, and sulphate of lime and magnesia, with sand and clay	10s.
—Partial analysis of a soil, including determinations of clay, sand, organic matter, and carbonate of lime	10s.
—Complete analysis of a soil	£3
—An analysis of oil-cake or other substance used for feeding purposes, showing the proportion of moisture, oil, mineral matter, albuminous matter, and woody fibre, as well as of starch, gum, and sugar in the aggregate; and an opinion of its feeding and fattening or milk-producing properties	10s.
—Analysis of any vegetable product	10s.
—Determination of the "hardness" of a sample of water before and after boiling	5s.
—Analysis of water of land-drainage, and of water used for irrigation	£1
—Analysis of water used for domestic purposes	£1 10s.
—An analysis of milk (to assist Members in the management of their Dairies and Herds, <i>bona fide</i> for their own information and not for trade purposes, nor for use in connection with the Sale of Food and Drugs Acts)	5s.
—Personal consultation with the Consulting Chemist. (To prevent disappointment it is suggested that Members desiring to hold a consultation with the Consulting Chemist should write to make an appointment)	5s.
—Consultation by letter	5s.
—Consultation necessitating the writing of three or more letters	10s.

Members wishing to exercise their privileges on the above-named terms, should forward their samples for examination, *by post or parcel, prepaid*, to the Consulting Chemist, Dr. JOHN GUSTUS VOLCKER, M.A., F.I.C., 22, Tudor Street, New Bridge Street, London, E.C.

The fees for analysis must be sent to the Consulting Chemist at the time of application.

GUIDE TO PURCHASERS OF FERTILISERS AND FEEDING-STUFFS.

UNDER the provisions of the Fertilisers and Feeding Stuffs Act of 1893, District Agricultural Analysts have been appointed throughout the country to examine samples taken in compliance with the Act. Inasmuch, however, as the procedure necessitated in these cases is very complicated, members of the Bath and West and Southern Counties Society will find it much simpler to avail themselves of the privileges afforded by the Society, and will be able to protect themselves, both amply and with far less trouble, by making their purchases in accordance with the following directions, and by stipulating that purchases shall be subject to the analysis and report of the Society's Consulting Chemist.

Purchasers are recommended in every case to insist upon having an *Invoice* given to them. This invoice should set out clearly:—

In the case of **Fertilisers**—

- (1.) the **name** of the fertiliser;
- (2.) whether the fertiliser be **artificially compounded** or not;
- (3.) the minimum **analysis** guaranteed in respect of the principal fertilising ingredients.

In the case of **Feeding-Stuffs**—

- (1.) the **name** of the article;
- (2.) the **description** of the article: whether it has been made from one substance or seed only, or from more than one.

(NOTE.—The use of the terms "Linseed-cake," "Cotton-cake," &c., implies that these cakes shall be "pure," and purchasers are recommended to insist upon these terms being used without any qualification such as "95 per cent.," "as imported," &c. "Oil-cake" should be avoided. Mixed feeding-cakes and meals should be only purchased with a guaranteed analysis.)

Members of the Society should see that the **Invoices** agree accurately with the orders given by them, and, in giving these orders, they should stipulate that the goods come up to the guarantees set out in the following list, and that they be sold **subject to the analysis and report of the Consulting Chemist of the Bath and West and Southern Counties Society.**

FERTILISERS.

Raw Bones, Bone-meal, or Bone-dust to be guaranteed "**PURE**," and to contain not less than 45 per cent. of Phosphate of Lime, and not less than 4 per cent. of Ammonia.

Boiled Bones to be guaranteed "**PURE**," and to contain not less than 55 per cent. of Phosphate of Lime, and not less than 1 per cent. of Ammonia.

Mineral Superphosphate of Lime to be guaranteed to contain a certain percentage of "Soluble Phosphate." [From 25 to 28 per cent. of Soluble Phosphate is an ordinarily good quality.]

Dissolved Bones to be guaranteed to be "**made from raw bone and acid only**," and to be sold as containing stated minimum percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia.

Compound Artificial Manures, Bone Manures, Bone Compounds, &c., to be sold by analysis stating the minimum percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia contained.

Basic Slag to be guaranteed to contain a certain percentage of Phosphoric Acid [a good quality contains 17 per cent. or more of Phosphoric Acid], and to be sufficiently finely ground that 80 to 90 per cent. passes through a sieve having 10,000 meshes to the square inch.

Peruvian Guano to be described by that name, and to be sold by analysis stating the minimum percentages of Phosphates and Ammonia.

Sulphate of Ammonia to be guaranteed to be "pure," and to contain not less than 24 per cent. of Ammonia.

Nitrate of Soda to be guaranteed to contain 95 per cent. of pure Nitrate Soda.

Kainit to be guaranteed to contain 23 per cent. of Sulphate of Potash.

All Fertilisers to be delivered in good and suitable condition for sowing.

FEEDING-STUFFS.

Linseed Cake, Cotton Cake (Decorticated and Undecorticated), and **Rape Cake** (or feeding purposes) to be pure, i.e. prepared *only* from the one kind of seed from which their name is derived. The report of the Consulting Chemist of the Bath and West and Southern Counties Society to be conclusive as to the purity or otherwise of any feeding-stuffs.

Mixed Feeding Cakes, Meals, &c., to be sold on a guaranteed analysis.

INSTRUCTIONS FOR SELECTING AND SENDING SAMPLES FOR ANALYSIS.

GENERAL RULES.

- 1.—A sample taken for analysis should be fairly *representative of the bulk* from which it has been drawn.
- 2.—The sample should reach the Analyst *in the same condition* as it was at the time when drawn.

FERTILISERS.

When **Fertilisers** are delivered in bags, select four or five of these from the bulk, and either turn them out on a floor and rapidly mix their contents, or else drive a shovel into each bag and draw out from as near the centre as possible a couple of shovelfuls of the manure, and mix these quickly on floor.

Halve the heap obtained in either of these ways, take one-half (rejecting the other) and mix again rapidly, flattening down with the shovel any lumps that appear. Repeat this operation until at last only some three or four pounds are left.

From this fill three tins, holding from $\frac{1}{2}$ -lb. to 1-lb. each, mark, fasten up and seal each of these. Send one for analysis, and retain the others for reference.

Or,—the manure may be put into glass bottles provided with well-fitting corks; the bottles should be labelled and the corks sealed down. The sample sent for analysis can be packed in a wooden box and sent by post or rail.

When manures are delivered in bulk, portions should be successively drawn from *different parts* of the bulk, the heap being turned over now and again. The portions drawn should be thoroughly mixed, sub-divided, and, finally, samples should be taken as before, except that when the manure is coarse and lumpy it is advisable to send larger samples than when it is in a finely-divided condition.

FEEDING-STUFFS.

Linseed, Cotton, and other Feeding Cakes.—If a single cake be taken, three pieces should be broken off right across the cake and from the middle portion of one piece to be sent for analysis, and the other two retained for reference. Each of the three pieces should be marked, wrapped in paper, fastened up and sealed. The piece forwarded for analysis can be sent by post or rail.

A more satisfactory plan is to select four to six cakes from different parts of the delivery, then break off a piece about four inches wide from the middle of

each cake, and pass these pieces through a cake-breaker. The 1 should then be well mixed, and three samples of about 1 lb. each taken and put in tins or bags duly marked, fastened, and sealed as b of these lots should be sent for analysis, the remaining two being reference. It is advisable, also, with the broken pieces to send a from an unbroken cake.

Feeding Meals, Grain, &c.—Handfuls should be drawn from th half-a-dozen different bags of the delivery; these lots should th mixed, and three $\frac{1}{2}$ -lb. tins or bags filled from the heap, each being fastened up, and sealed. One sample is to be forwarded for analysis, others retained for reference.

SOILS, WATERS, &c.

Soils.—Have a wooden box made 6 inches in length and width 9 to 12 inches deep, according to the depth of soil and subsoil o Mark out in the field a space of about 12 inches square; dig round in direction a trench, so as to leave undisturbed a block of soil and 9 to 12 inches deep; trim this block to make it fit into the wooden the open box over it, press down firmly, then pass a spade under the lid it up, gently turn over the box, nail on the lid, and send by rail. T then be received in the position in which it is found in the field.

In the case of very light, sandy, and porous soils, the wooden box once inverted over the soil and forced down by pressure, and then du

Waters.—Samples of water are best sent in glass-stoppered bottles, holding half-a-gallon. One such bottle is sufficient for a sin Care should be taken to have these scrupulously clean. In taking a water for analysis it is advisable to reject the first portion drawn or as to obtain a sample of the water when in ordinary flow. The bottle rinsed out with the water that is to be analysed, and it should be filled to the top. The stopper should be secured with string, or be tied over or soft leather. The sample can then be sent carefully packed i wooden box with sawdust, &c., or in a hamper with straw.

Milk.—A pint bottle should be sent in a wooden box.

GENERAL INSTRUCTIONS.

Time for Taking Samples.—All samples, both of fertilisers and fee should be taken as soon after their delivery as possible, and should Analyst within *ten days* after delivery of the article. In every case able that the Analyst's certificate be received before a fertiliser is feeding stuff is given to stock.

Procedure in the Event of the Vendor wishing Fresh Samples to b Should a purchaser find that the Analyst's certificate shows a feeding-stuff not to come up to the guarantee given him, he may vendor of the result and complain accordingly. He should then s vendor one of the two samples which he has kept for reference. If, h vendor should demand that a fresh sample be drawn, the purchaser this, and also give the vendor an opportunity of being present, either through a representative whom he may appoint. In that case, th should be taken in the presence of both parties with the same pre before described, each of which should be duly packed up, labelled, at both parties. One of these is to be given to the vendor, one is to be Analyst, and the third is to be kept by the purchaser for reference analysis if necessary.

All samples intended for the Consulting Chemist of the Society addressed (postage or carriage prepaid) to Dr. J. AUGUSTUS VOELCKE F.I.C., 22, Tudor Street, New Bridge Street, London, E.C. Separate Instruction should be sent at the same time.

OUTHAMPTON MEETING,

MAY 24, 25, 26, 27, AND 28, 1897.

MONEY PRIZES.

	£	s.	d.	PAGE
HORSES	520	0	0	lxxxiv
CATTLE	1,218	10	0	lxxxv
SHEEP	468	0	0	lxxxviii
PIGS	260	0	0	lxxxix
CHEESE	162	0	0	xc
BUTTER AND CREAM	75	0	0	xc
BUTTER-MAKING	46	0	0	xcii
MILKING	11	5	0	xciii
HORSE-SHOEING	22	0	0	xciii
SHEEP-SHEARING	20	0	0	xciv
POULTRY	159	10	0	ciii

Total	£2,962	5	0
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DONORS OF MONEY PRIZES.

	£	s.	d.
Bath and West and Southern Counties Society	2,910	15	0
English Jersey Cattle Society	30	0	0
Kerry and Dexter Cattle Society	10	10	0
Shropshire Sheep Breeders' Association	9	0	0
English Guernsey Cattle Society	2	0	0

£2,962	5	0
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DONORS OF MEDALS AND PLATE.

In addition to the Money Prizes, there are offered :—

- A GOLD MEDAL, in the Shire Horse Classes, by the Shire Horse Society.
- A GOLD and a SILVER MEDAL, in the Hunter Classes, by the Hunters' Improvement Society.
- A CHALLENGE SILVER BOWL, in the Jersey Classes, by Sir James Blyth, Bart.
- A GOLD, a SILVER, and a BRONZE MEDAL, in the Butter Test Classes, by the English Jersey Cattle Society.
- A SILVER CUP, and a SILVER, and a BRONZE MEDAL, in the Guernsey Butter Test Class, by the English Guernsey Cattle Society.
- A GOLD MEDAL, and 24 SILVER, and 24 BRONZE MEDALS, in the Cider Classes, by the Society.
- A GOLD, a SILVER, and a BRONZE MEDAL, in the Butter-making Classes, by the Society.
- A GOLD MEDAL, for Dairy Appliance, by the Society.
- A SILVER CUP, in the Poultry Classes, by Sir Walter Gilbey, Bart.
- A SILVER CUP, in the Poultry Classes, by Mr. W. B. Tegetmeier.

PRIZES.

HORSES.		First Prize.	Second Prize.	Third Prize.
Unless it is otherwise stated, an Animal cannot be entered in more than one Class.		£	£	£
SHIRE.				
(Eligible for the Shire Horse Society's Stud Book.)				
CLASS				
1.—STALLION, foaled before 1895	20	10	5	
2.—STALLION, foaled in 1895	20	10	5	
3.—COLT, foaled in 1896	15	10	5	
4.—MARE and FOAL, or in-Foal	20	10	5	
5.—FILLY, foaled in 1894	10	5	3	
6.—FILLY, foaled in 1895	10	5	3	
7.—FILLY, foaled in 1896	10	5	3	
Offered by the Shire Horse Society, for Best MARE or FILLY in Class 4, 5, 6, or 7 (see Special Conditions 36, on page xcvi), a Gold Medal, value £10.				
ANY AGRICULTURAL BREED EXCEPT SHIRE.				
8.—MARE and FOAL, or in-Foal	20	10	5	
9.—FILLY, foaled in 1894	10	5	3	
10.—FILLY, foaled in 1895	10	5	3	
11.—FILLY, foaled in 1896	10	5	3	
HUNTERS.				
12.—MARE and FOAL, or in-Foal	20	10	5	
13.—MARE or GELDING, foaled in 1893	20	10	5	
14.—FILLY or GELDING, foaled in 1894	15	10	5	
15.—FILLY or GELDING, foaled in 1895	10	7	3	
16.—FILLY, COLT, or GELDING, foaled in 1896	10	7	3	
SPECIAL PRIZES.				
(Offered by the Hunters' Improvement Society.)				
A Gold Medal, or £5, and a Bronze Medal, for the best HUNTER BROOD MARE in Class 12, in- Foal to, or with Foal at-foot by, a Thorough- bred Horse or Registered Hunter Sire, under Conditions 37, stated on p. xcvi.				
A Silver Medal, for the Best HUNTER FILLY in Class 14, 15, or 16, not exceeding three years' old (foaled in 1894, 1895, or 1896), under Condi- tions 37a, stated on p. xcvi.				

HORSES— <i>continued.</i>	First Prize.	Second Prize.	Third Prize.
	£	£	£
HACKNEYS.			
<i>imal entered in Class 17, 18, 19, or 20 lso be entered in Class 21 or 22 (see ation 9).</i>			
or GELDING, foaled before 1893, over hands	10	5	2
or GELDING, foaled in 1893 or 1894, r 14 hands	10	5	2
PONIES.			
or GELDING, 4 years old or over, not eding 14 hands	10	5	2
or GELDING, 4 years old or over, not eding 13 hands	10	5	2
HARNESS.			
or GELDING, 4 years old or over, ex- ling 14 hands	10	5	2
or GELDING, 4 years old or over, not eding 14 hands	10	5	2
<hr/>			
CATTLE.			
DEVON.			
calved in 1893 or 1894	15	10	5
calved in 1895	15	10	5
calved in 1896	15	10	3
n-Milk or in-Calf, calved before 1894	15	10	3
t, in-Milk or in-Calf, calved in 1894	15	10	3
t, calved in 1895	10	5	2
t, calved in 1896	7	5	2
SHORT-HORN.			
calved in 1893 or 1894	15	10	5
calved in 1895	15	10	5
calved in 1896	15	10	3
n-Milk or in-Calf, calved before 1894	15	10	3
t, in-Milk or in-Calf, calved in 1894	15	10	3
t, calved in 1895	10	5	2
t, calved in 1896	7	5	2
HEREFORD.			
calved in 1893 or 1894	15	10	5
calved in 1895	15	10	5
calved in 1896	15	10	3
n-Milk or in-Calf, calved before 1894	15	10	3
t, in-Milk or in-Calf, calved in 1894	15	10	3
t, calved in 1895	10	5	2
t, calved in 1896	7	5	2

CATTLE—continued.		First Prize.	Second Prize.	Third Prize.
CLASS	SUSSEX.	£ s.	£	£
44.—BULL, calved in 1893 or 1894		15	10	5
45.—BULL, calved in 1895		15	10	5
46.—BULL, calved in 1896		15	10	3
47.—Cow, in-Milk or in-Calf, calved before 1894		15	10	3
48.—HEIFER, in-Milk or in-Calf, calved in 1894		15	10	3
49.—HEIFER, calved in 1895		10	5	2
50.—HEIFER, calved in 1896		7	5	2
JERSEY.				
51.—BULL, calved in 1893 or 1894		15	10	5
52.—BULL, calved in 1895		15	10	5
53.—BULL, calved in 1896		15	10	3
54.—Cow, in-Milk or in-Calf, calved before 1894		15	10	3
55.—HEIFER, in-Milk or in-Calf, calved in 1894		15	10	3
56.—HEIFER, calved in 1895		10	5	2
57.—HEIFER, calved in 1896		7	5	2
SPECIAL PRIZE.				
(Offered by Sir James Blyth, Bart.)				
The Blythwood Challenge Silver Bowl, weighing 25 ounces, for the Best Jersey Cow or Heifer in-Milk, in any of the Jersey Classes, bred in Great Britain or Ireland, to be awarded by inspection (see Special Conditions 46, on p. xcix.)				
GUERNSEY.				
58.—BULL, calved in 1893 or 1894		15	10	5
59.—BULL, calved in 1895		15	10	5
60.—BULL, calved in 1896		15	10	3
61.—Cow, in-Milk or in-Calf, calved before 1894		15	10	3
62.—HEIFER, in-Milk or in-Calf, calved in 1894		15	10	3
63.—HEIFER, calved in 1895		10	5	2
64.—HEIFER, calved in 1896		7	5	2
ABERDEEN-ANGUS.				
65.—BULL, calved in 1894, 1895, or 1896		7	5	2
66.—Cow, in-Milk or in-Calf, calved before 1894		7	5	2
67.—HEIFER, calved in 1894, 1895, or 1896		7	5	2
KERRY.				
68.—BULL, calved in 1894, 1895, or 1896		7	5	2
69.—Cow, in-Milk or in-Calf, calved before 1894		7	5	2
70.—HEIFER, calved in 1894, 1895, or 1896		7	5	2
SPECIAL PRIZE.				
(Offered by the Kerry and Dexter Cattle Society.)				
Best Animal in Class 68, 69, or 70, whose Sire and Dam are entered in the Herd Book		5	5	

CATTLE— <i>continued.</i>		First Prize.	Second Prize.	Third Prize.
ss	DEXTER KERRY.	£ s.	£	£
—	BULL, calved in 1894, 1895, or 1896	7	5	2
—	Cow, in-Milk or in-Calf, calved before 1894	7	5	2
—	HEIFER, calved in 1894, 1895, or 1896	7	5	2
SPECIAL PRIZE.				
(Offered by the Kerry and Dexter Cattle Society.)				
Best Animal in Class 71, 72, or 73, whose Sire and Dam are entered in the Herd Book		5 5		
BUTTER TEST PRIZES.				
(Offered by the English Jersey Cattle Society.)				
Open to Cows of any Breed or Cross.				
Regulation 47, as to entry in Herd Book, does not apply to Classes 74 or 75.)				
Animals entered in other Classes can also be entered in these Classes.)				
—Cows under 900 lbs. live weight, yielding the largest quantity of Butter by the practical Test of the Separator and Churn, judged by the scale of points adopted by the English Jersey Cattle Society		10	3	2
—Cows 900 lbs. live weight and over ditto ditto		10	3	2
Gold, Silver, and Bronze Medals are offered for the 3 Jersey Cows, entered or eligible for entry in the English Jersey Herd Book, competing in the test, giving the greatest yields of Butter in the test.				
(Offered by the English Guernsey Cattle Society.)				
Cow or Heifer in the Guernsey Classes, entered in the English Guernsey Cattle Society's Herd Book, yielding the largest quantity of Butter by the practical Test of the Separator and Churn:—				
1st Prize, Silver Cup, value £5		1		
2nd „ Silver Medal and		1		
3rd „ Bronze Medal and		1		

S H E E P.		First Prize.	Second Prize.	Third Prize.	Fourth Prize.
CLASS		£	£	£	£
LEICESTER.					
76.—Shearling RAM		10	5	2	
77.—Pair of RAM LAMBS, dropped in 1897 .		10	5	2	
78.—Pen of three Shearling EWES . . .		10	5	2	
COTSWOLD.					
79.—Shearling RAM		10	5	2	
80.—Pair of RAM LAMBS, dropped in 1897 .		10	5	2	
81.—Pen of three Shearling EWES . . .		10	5	2	
KENTISH or ROMNEY MARSH.					
82.—Shearling RAM		10	5	2	
83.—Pair of RAM LAMBS, dropped in 1897 .		10	5	2	
84.—Pen of three Shearling EWES . . .		10	5	2	
DEVON LONG-WOOL.					
85.—Shearling RAM		10	5	2	
86.—Pair of RAM LAMBS, dropped in 1897 .		10	5	2	
87.—Pen of three Shearling EWES . . .		10	5	2	
SOUTHDOWN.					
88.—Shearling RAM		10	5	2	
89.—Pair of RAM LAMBS, dropped in 1897 .		10	5	2	
90.—Pen of three Shearling EWES . . .		10	5	2	
HAMPSHIRE DOWN.					
91.—Shearling RAM		10	5	2	
92.—Pair of RAM LAMBS, dropped in 1897 .		10	5	2	
93.—Pen of three Shearling EWES . . .		10	5	2	
SHROPSHIRE.					
94.—Shearling RAM		10	5	3	2
95.—Pair of RAM LAMBS, dropped in 1897 .		10	5	3	2
96.—Pen of three Shearling EWES . . .		10	5	3	2
The 3rd Prizes in the Shropshire Classes are offered by the Shropshire Sheep Breeders' Association.					
OXFORD DOWN.					
97.—Shearling RAM		10	5	2	
98.—Pair of RAM LAMBS, dropped in 1897 .		10	5	2	
99.—Pen of three Shearling EWES . . .		10	5	2	
SOMERSET AND DORSET HORN.					
100.—Shearling RAM		10	5	2	
101.—Pair of RAM LAMBS, dropped after Nov. 1st, 1896		10	5	2	
102.—Pen of three Shearling EWES . . .		10	5	2	

P I G S.	First Prize.	Second Prize.	Third Prize.
	£	£	£
BERKSHIRE.			
farrowed in 1894 or 1895	7	3	2
farrowed in 1896	7	3	2
f BOARS, farrowed in 1897	5	2	1
ng Sow, farrowed before 1897 . . .	7	3	2
f Breeding Sows, farrowed in 1897 .	5	2	1
LARGE WHITE.			
farrowed in 1894 or 1895	7	3	2
farrowed in 1896	7	3	2
f BOARS, farrowed in 1897	5	2	1
ng Sow, farrowed before 1897 . . .	7	3	2
f Breeding Sows, farrowed in 1897 .	5	2	1
MIDDLE WHITE.			
farrowed in 1894 or 1895	7	3	2
farrowed in 1896	7	3	2
f BOARS, farrowed in 1897	5	2	1
ng Sow, farrowed before 1897 . . .	7	3	2
f Breeding Sows, farrowed in 1897 .	5	2	1
L WHITE or SMALL BLACK.			
farrowed in 1894 or 1895	7	3	2
farrowed in 1896	7	3	2
f BOARS, farrowed in 1897	5	2	1
ng Sow, farrowed before 1897 . . .	7	3	2
f Breeding Sows, farrowed in 1897 .	5	2	1
TAMWORTH.			
farrowed in 1894 or 1895	7	3	2
farrowed in 1896	7	3	2
f BOARS, farrowed in 1897	5	2	1
ng Sow, farrowed before 1897 . . .	7	3	2
f Breeding Sows, farrowed in 1897 .	5	2	1

PRODUCE.

PRIZES FOR CIDER.

(Open to Growers or Makers.)

First Prize in each Class, a Silver Medal and a Certificate.

Second Prize in each Class, a Bronze Medal and a Certificate.

CHAMPION PRIZE.

For Best Exhibit in any of the Classes, a Gold Medal and a Certificate.

The Cider must have been made in 1896, and each Exhibit in Cask must consist of not less than 18 gallons.

CLASS Cider made in Devon.

- 128.—Cask of CIDER (*open to LANDOWNERS only*).
- 129.—12 Bottles of CIDER (*open to LANDOWNERS only*).
- 130.—Cask of CIDER (*open to TENANT FARMERS only*).
- 131.—12 Bottles of CIDER (*open to TENANT FARMERS only*).
- 132.—Cask of CIDER (*open to CIDER MERCHANTS only*).
- 133.—12 Bottles of CIDER (*open to CIDER MERCHANTS only*).

Cider made in Herefordshire.

- 134.—Cask of CIDER (*open to LANDOWNERS only*).
- 135.—12 Bottles of CIDER (*open to LANDOWNERS only*).
- 136.—Cask of CIDER (*open to TENANT FARMERS only*).
- 137.—12 Bottles of CIDER (*open to TENANT FARMERS only*).
- 138.—Cask of CIDER (*open to CIDER MERCHANTS only*).
- 139.—12 Bottles of CIDER (*open to CIDER MERCHANTS only*).

Cider made in Somerset.

- 140.—Cask of CIDER (*open to LANDOWNERS only*).
- 141.—12 Bottles of CIDER (*open to LANDOWNERS only*).
- 142.—Cask of CIDER (*open to TENANT FARMERS only*).
- 143.—12 Bottles of CIDER (*open to TENANT FARMERS only*).
- 144.—Cask of CIDER (*open to CIDER MERCHANTS only*).
- 145.—12 Bottles of CIDER (*open to CIDER MERCHANTS only*).

Cider made in Counties other than Devon, Herefordshire, or Somerset.

- 146.—Cask of CIDER (*open to LANDOWNERS only*).
- 147.—12 Bottles of CIDER (*open to LANDOWNERS only*).
- 148.—Cask of CIDER (*open to TENANT FARMERS only*).
- 149.—12 Bottles of CIDER (*open to TENANT FARMERS only*).
- 150.—Cask of CIDER (*open to CIDER MERCHANTS only*).
- 151.—12 Bottles of CIDER (*open to CIDER MERCHANTS only*).

CHEESE.	First Prize.	Second Prize.	Third Prize.	Fourth Prize.
	£	£	£	£
Four CHEESES (the total weight being not less than 224 lbs.), made in 1896	20	12	8	6
Four CHEESES (the total weight being not less than 112 lbs.), made in 1896	12	8	6	4
Four Cheddar CHEESES (the total weight being not less than 112 lbs.), made in 1896 by a Student who has received not less than a week's instruction in one of the Society's Cheese Schools	10	6	4	3
Four CHEESES (the total weight being not less than 112 lbs.), made in 1897	10	6	4	3
Four Cheddar CHEESES (the total weight being not less than 112 lbs.), made in 1897 by a Student who has received not less than a week's instruction in one of the Society's Cheese Schools	8	5	3	1
Ten Loaf or other Truckle CHEESES, made in 1897	5	3	2	1
Four Caerphilly CHEESES, made in 1897	3	2	1	
Five Cream or other Soft CHEESES	3	2	1	

BUTTER AND CREAM.

(*These Classes are not open to Professional Teachers.*)

3 lbs. of Fresh (or very slightly salted) BUTTER, in pound rolls or brick-shapes, made of Cream from Cows other than Channel Island Breeds	5	3	2	1
3 lbs. of Fresh (or very slightly salted) BUTTER, in pound rolls or brick-shapes, made of Cream from Cows of Channel Island Breeds only	5	3	2	1
3 lbs. of Fresh (or very slightly salted) BUTTER, in pound rolls or brick-shapes, made by a Student who has attended a course of instruction at any Butter School conducted by the Society or by a County Council	5	3	2	1
3 lbs. of Fresh (or very slightly salted) BUTTER, in pound rolls or brick-shapes, made from scalded Cream	5	3	2	1

BUTTER AND CREAM— <i>contd.</i>		First Prize.	Second Prize.	Third Prize.	Fourth Prize.
CLASS		£	£	£	£
164.—3 lbs. of BUTTER, to which no salt whatever has been added, in pound rolls or brick-shapes		5	3	2	
SPECIAL PRIZES.					
Three Prizes of £1 each will be given for BUTTER, which has the best keeping qualities, exhibited in Class 160, 161, 162, 163, or 164. 1 lb. will be taken on the first day of the Show from each Prize lot of Butter in the Classes named, and will be judged on the last day of the Show.		1 1 1			
165.—12 lbs. of Salted BUTTER, in a jar or crock, to be delivered, to the Secretary, four weeks before the Show		5	3	2	
166.—4 half-pounds of Clotted or Devonshire Cream, packed either in tins or earthen jars		3	2	1	
BUTTER-MAKING.					
<i>Professional Teachers, Makers or Vendors of Churns, or persons in any way representing the interests of Makers or Vendors of Churns, are not eligible to compete in the Butter-Making Classes; and this Regulation will be strictly enforced.</i>					
<i>A previous winner of the Society's Champion Gold Medal is not eligible to compete in any of the Butter-Making Classes.</i>					
These Prizes will be awarded for the best and largest quantity of Butter made from a given quantity of Cream in the cleanest and most approved method.					
167.—On the 1st day of the Show, open to any Dairymaid (not residing with or employed by her parents) working for wages not exceeding £20 a year		5	3	2	
168.—On the 2nd day of the Show, open only to Students who have attended a course of instruction at any Butter School conducted by the Society or by a County Council		5	3	2	
169.—On the 3rd day of the Show, open to any Woman		5	3	2	

MAKING—continued.

	First Prize.	Second Prize.	Third Prize.	Fourth Prize.	Fifth Prize.
th day of the Show, open Man or Woman, except winner of the 1st Prize in 169	£ s. 5 0	£ s. 3 0	£ s. 2 0	£ s. 1 0	£ s. 0 10

CHAMPION PRIZES.

day of the Show the
Prizes in Classes 167,
and 170, will compete

- e—A Gold Medal, and
ociety's Certificate.
- te—A Silver Medal, and
ociety's Certificate.
- e—A Bronze Medal, and
ociety's Certificate.

MILKING.

20 years of age and	1 10	1 0	0 15	0 10
men	1 10	1 0	0 15	0 10
ths under 20 years of	1 10	1 0	0 15	0 10

APPLIANCE.

Medal is offered for the
acidimeter.

ng will be regarded as
points in deciding upon
s of the exhibits in Class
iciency ; simplicity of
ion ; adaptability to the
milk and milk products ;
only in cost.

COEING.

oeing of a NAG HORSE Smith on the 3rd day Show	5 0	3 0	2 0	1 0
oeing of a CART HORSE Smith on the 4th day Show	5 0	3 0	2 0	1 0

tion Committee of the
company will admit the

SHOEING— <i>continued.</i>		First Prize.	Second Prize.	Third Prize.	F I
Winners of First Prizes in these Competitions to the Official Register <i>free of charge</i> , on their satisfying the Judges that they have a fair knowledge of the structure of the horse's foot, and on the necessary application being made to the Company in the prescribed form and subject to the usual conditions.		£	£	£ s. d.	f
SHEARING.					
CLASS					
177.—Best Shearing of Two SHEEP on the 5th day of the Show by Competitors under 16 years of age		2	1	0 10	
178.—Best Shearing of Two SHEEP on the 5th day of the Show by Competitors of 16 and under 20 years of age		3	2	1 0	
179.—Best Shearing of Two SHEEP on the 5th day of the Show by Competitors 20 years of age and over		4	3	2 0	

CONDITIONS AND REGULATIONS.

GENERAL.

ENTRIES.

1. The following are the Entry Fees, which must be paid when the Entries are made.

		Members.	Non-Members.
Horses (including Horse Box)	for each Entry	10s.	20s.
Cattle, Sheep, and Pigs	do.	5s.	15s.
Butter Test Prizes	do.	21s.	21s.
Cheese, Class 152	do.	10s.	20s.
Do. Classes 153, 155, 157, 158, and 159	do.	5s.	10s.
Do. Classes 154 and 156	do.	5s.	5s.
Cider, Butter, and Cream	do.	2s. 6d.	5s.
Butter-making Classes 168 to 170	do.		
Horse-Shoeing and Sheep-Shearing	do.		
Milking	do.	2s. 6d.	2s. 6d.
Butter-Making, Class 167	do.	1s.	1s.
Dairy Appliances	do.	5s.	15s.

2. No Exhibitor can make more than three entries in any one Class of Horses, Cattle, Sheep, or Pigs. (See Regulation 58 as to Dairy Produce.)

3. Entries should reach the Secretary on or before April 5; after that date and up to April 12, Entries will only be received *on payment of double fees* in each case.

4. The privilege of entering at Members' Fees is limited to Members of the Society elected on or before January 26, 1897, and subscribing not less than 1*l.* annually.

5. Where a Prize is offered for a *pair* or *pen* of Animals, Single Entry-fees only are payable for each *pair* or *pen*, and only one Entry-form must be used.

6. All Entries must be made on the printed forms to be obtained of the Secretary (THOS. F. PLOWMAN, 4, Terrace Walk, Bath), and, in applying for Forms, Exhibitors are requested to state how many Entries they wish to make of either Horses, Cattle, Sheep, Pigs, &c., as each Stock Entry must be made on a separate Form.

7. All Entry-forms must be signed by the Exhibitor or his Agent. Exhibitors are requested to carefully examine the List of Prizes and Conditions, as the Society cannot be responsible for any errors made by Exhibitors in their Entry-forms. An Exhibitor omitting to give information asked for on the Entry-form, with regard to the age, name, colour, sire, dam, &c., of an Animal, will be liable to have his Entry disqualified.

8. An Exhibitor who has made, in due time, an Entry of Horses, Cattle, Sheep, or Pigs in a particular Class, will be permitted, up to Friday, April 30, to withdraw the Entry of such Animal, and to substitute for it the Entry of another Animal in the same Class, on payment of the difference, if any, between the amount of the Entry-fee originally paid for the Animal withdrawn, and the post Entry-fee.

9. An Animal entered in Class 17, 18, 19, or 20, can also be entered in Class 21 or 22, provided notice is given on the Entry-form and a second Entry-fee of 10*s.* for Members and 1*l.* for non-Members be paid. Except in

these and the Butter-Test Classes an Animal or Article cannot be entered in more than one Class.

10. All Animals or Articles exhibited must be *bonâ fide* the property of the Exhibitor at and from the time of Entry.

SHOWYARD.

11. The Yard will be open for the reception of Horses, Cattle, Sheep, and Pigs, on Friday and Saturday, May 21 and 22, from 7 A.M. to 6 P.M. Horses will also be received from 6 to 8 o'clock on the morning of the first day of Show, but all other Stock Entries must be in the Yard the previous Saturday. (See Regulations 55 and 56 for Dairy Produce.) A Label denoting the number of each Entry will be sent by the Secretary, and must be securely affixed to the head of the Animal, or, in the case of other Exhibits, to the receptacle containing such Exhibits.

12. All Exhibits and all persons in charge of the same, will be subject to the Orders, Regulations, and Rules of the Society.

13. All Exhibits, except Horses (see Conditions 30 and 31), must remain in the place allotted to them in the Showyard until 6 P.M. on the last day of the Show.

14. No Animal can be permitted to be removed from its place without leave from the Steward of the Department.

15. The Society, its Officers, and Servants, will not be liable for any errors or mistakes that may happen in placing or penning the Stock or Articles to be exhibited, but the Servants in charge of the same must see that they are placed or penned according to their Entries.

16. All Servants in charge of Stock must be in attendance each day during the Show at least a quarter of an hour before the time appointed for parading the Animals in the Show-rings, and must take their Animals into the ring when desired by the Stewards. Any infringement of this or any other rule, or neglecting to obey the orders of the Stewards, will render the Exhibitor liable to a fine of 1*l.*, and to the forfeiture of any Prize he may be entitled to.

17. The Society will not, in any case, or under any circumstances, hold itself responsible for any loss, damage, misdelivery, illness, or accident that may occur *through* or *to* any Exhibit; and it shall be a condition of entry that each Exhibitor shall hold the Society harmless, and indemnify it against any legal proceedings arising from any of the above-named circumstances.

18. Hay, straw, and green food will be delivered to the Servants of Exhibitors free of expense at the Forage Stores in the Showyard, and they must take it to their respective Animals. Servants must apply at the Forage Stores for their Forage Tickets after they have brought their Animals into the Yard.

NOTE.—For the convenience of Exhibitors wishing to sell their Animals, a Register will be kept at the Secretary's Office, in which they may enter the prices.

DISQUALIFICATIONS.

19. No Animal which has been exhibited as Fat Stock at any Show shall be eligible to compete for the Prizes offered in this Prize Sheet.

20. No Animal which has taken a First Prize at any Meeting of this Society can compete again in the corresponding Class.

21. An Animal having any unsoundness likely to be transmitted to its progeny, shall be disqualified thereby from receiving any Prize offered by or through the Society.

22. If any wilful mis-statement, or misrepresentation, be proved to have

been made by an Exhibitor or Competitor, either in an Entry-form or otherwise, in connection with this or any Agricultural Society, the Council shall have power to withhold any Prize awarded to such Exhibitor or Competitor, and to disqualify him or her from exhibiting or competing at the Society's future Shows. (See also Regulation 7.)

PENALTIES.

23. As the non-exhibition of Animals entered for the Show causes unnecessary preparations and expense, and disarranges the Showyard, any person entering Stock, and failing to exhibit the same shall pay a penalty of 10s. for each Entry, unless a Certificate, under the hand of the Exhibitor or his authorised Agent, be lodged with the Secretary of the Society, before the day of Exhibition, certifying that such non-exhibition is caused either by— (1) the death of the animal or animals; or (2) contagious or infectious disease (confirmed by the explanatory Certificate of a Veterinary Surgeon); or (3) by its becoming ineligible for the Class in which it has been entered. Such fines to be recoverable as debts to the Society, and, until payment, to debar all persons owing them from exhibiting at any future meeting of the Society.

24. Every Exhibitor will be required to undertake to forfeit and pay to the Society the sum of 20*l.*, as and for liquidated damages, if any Animal which he exhibits be to his knowledge suffering from any contagious or infectious disease, and the Stewards are empowered to prevent the entry of any diseased Animal into the Yard, or to have it removed therefrom, if they should consider it desirable.

25. Stock Exhibitors will receive Admission Tickets for the Show for themselves and the Servants required to take charge of their Animals, and Exhibitors will be held responsible for their proper use. If a Ticket is transferred or otherwise improperly used it will be cancelled, and the Exhibitor will be required to pay a fine of 1*l.* Servants in charge of Stock at night must, if they leave the Yard, return before 10 p.m., or they will not be admitted.

AWARDS.

26. The Society reserves to itself the right to withhold any Prize, if, in the opinion of the Stewards, the conditions and regulations have not been properly complied with.

27. Except under a special recommendation from the Judges, no Second Prize will be given in any of the Classes unless there are three Entries, no Third Prize unless there are six Entries, no Fourth Prize unless there are nine Entries, and no Fifth Prize unless there are twelve Entries. No Prize additional to those advertised by the Society will be given in any Class, except on the written recommendation of the Judges (which shall state the special reasons for the Prize) and the Steward of the Class.

28. The Certificate of the Veterinary Inspector, whether as to age or soundness, shall be required only in cases where the Judges are in doubt, or where the Stewards may consider it necessary. The decision of the Inspector in such cases shall be final and conclusive; and in case it shall be against the Animal to which a Prize has been awarded, such Animal shall be disqualified from receiving such Prize.

PROTESTS.

29. Any protest must be lodged with the Secretary in the handwriting of an Exhibitor, or that of his representative, on the day on which the Award is made, and no protest will be accepted without a deposit of 3*l.*,

which sum, unless the protest is substantiated, will be forfeited at the discretion of the Stewards. Protests will be considered by the Disqualifying Committee, whose decision shall be final and conclusive.

APPLYING TO CERTAIN CLASSES ONLY.

Horses.

30. Horses can be removed from the Yard at night on deposit by the Exhibitor of 3*l*. at the Finance Office, which sum will be forfeited if the Horse does not return at 8 A.M. each day during the Exhibition.

31. The Stallions in Classes 1 and 2 are not required to remain in the Yard longer than 6 o'clock in the evening of the third day of the Show.

32. Exhibitors must provide saddles for Horses in Classes 13, 17, 18, 19, and 20, as they are to be ridden; and vehicles and harness for those in Classes 21 and 22, which are to be driven.

33. No Horse, unless a Foal, will be admitted into the ring without a proper bit.

34. The Prizes for Stallions in Class 1 will be withheld until a Certificate from the owner is delivered to the Secretary that the Horse has served at least 20 Mares during the current season.

35. In Classes 4, 8, and 12, Mares shall be exhibited with their own foals at foot, or shall hereafter be certified to have produced a living Foal before the 1st of August of the year of the Show.

36. The following special conditions apply only to the Prize offered by the Shire Horse Society, viz.: the owner of the Animal entered to have been a Member of the Bath and West and Southern Counties Society for not less than 6 months previous to April 12, 1897; a Mare six years old, or upwards, to have had a living foal; no Animal to compete which has won the Shire Horse Society's Gold Medal during the current year, the Royal and London Shows being excepted; the winning Animal to be entered, or eligible for entry, in the Shire Horse Society's Stud Book; and a Certificate that she is free from hereditary disease to be lodged with the Secretary of the Shire Horse Society, the Veterinary examination to be made on the ground by the Veterinary Inspector appointed for the Show.

37. The following special conditions apply only to the Prize offered by the Hunters' Improvement Society, for Hunter Brood Mares, viz.:—The Mare awarded the Medal must be registered in the Society's Record of Hunter Mares and Sires (or entered for Volume VII.), and not having previously won the Hunters' Improvement Society's Gold Medal or Premium as a Brood Mare, possessing a Certificate of soundness from hereditary disease, signed on the ground by the local Society's appointed Veterinary Inspector, who must be a Member of the Royal College of Veterinary Surgeons. In the case of Mares entered as "in-foal," a further Certificate of foaling must also be lodged with the Secretary of the Hunters' Improvement Society.

NOTE.—If the Judges select a Brood Mare whose Entry for the Record was lodged before the date of the Associated Society's Show, the Prize will be increased to a Gold Medal and 1*l*., or 5*l*. and a Silver Medal.

37A. The following Special Conditions apply only to the Prize offered by the Hunters' Improvement Society for Hunter Filly. The Filly awarded the Medal must be registered in the Society's Record of Hunter Mares and Sires (or entered for Volume VII.), and not having previously won the Hunters' Improvement Society's Silver Medal in 1897, possessing a Certificate of soundness from hereditary disease, signed on the ground by the local Society's

Veterinary Inspector, who must be a Member of the Royal College of Veterinary Surgeons.

—If the Judges select a Filly whose Entry for the Record was before the date of the *Associated Society's Show*, the Prize will be to a Silver Medal and 1*l*.

CATTLE.

1 Bulls must have a ring or clamp attached to the nose, and in the classes must be provided with a strong chain, and be led with a proper collar. All cattle must be properly secured to the satisfaction of the Officers of the Society, on being brought to the gate of the Yard, or they will not be eligible.

1 Cattle will be required to be paraded in the ring at least once at the discretion of the Stewards.

1 Bull above 2 years old will be eligible to receive a Prize until certified to have served not less than six different Cows (or Heifers), previous to 1897, and it must be the sire of live Calves dropped in the year.

1 Cow will be eligible to receive a Prize until certified to have had a calf within the twelve months preceding the date of Show, or that the calf, if dead, was born at the proper time.

In the Classes for Heifers "in-Milk or in-Calf," no Heifer entered as ineligible will be eligible to receive a Prize until certified to have produced a calf before January 1, 1898, or that the Calf, if dead, was born at the proper time before that date.

Every Cow or Heifer in-Milk shall be milked dry in the Showyard at the evening preceding the day of judging, in the presence of an Officer of the Society appointed for the purpose.

Any Animal in the Cattle Classes found to be artificially coloured will be disqualified.

Any person selling Milk in the Yard, except in the place appointed by the Stewards, will be fined 5*s*. for each infringement of this Regulation.

The Blythwood Challenge Bowl when won two years in succession or more at intervals, by different animals belonging to the same Exhibitor, shall be absolutely his property. Any Animal having been awarded one Blythwood Bowl in 1897 will not be eligible to compete for a Bowl in the current year. The possessor of the Bowl to give security to the Society that it shall be delivered up to the Secretary one week before the date of the Society's Show the following year; and in the event of the Exhibitor not being the winner of the Bowl the second year, a medal will be given him by Sir James Blyth, as a memento of his success in the previous year.

Except in Classes 74 and 75, every Animal entered for Competition must be entered, or certified as eligible to be entered, in the Herd Book of its Breed, or in the Herd Book of its Breed, and has been in existence for not less than five years. Where an Animal is entered by the Exhibitor as eligible to be entered in the Herd Book of its Breed, proof of such eligibility must be submitted to the Secretary at the time of making the Entry.

SHEEP.

1 Sheep (with the exception of the Welsh Mountain Breed) over one year old must have been really and fairly shorn bare on or after the 1st of January 1897. If the Judges consider that a Sheep has not been shorn bare, they will report this to the Stewards, with a view to its disqualification.

Conditions and Regulations.

49. Each pen of Ewes must be of the same Flock. No Exhibitor enter in the Leicester and any other Long-wool Classes from the same

[Pigs.

50. The Pair of Pigs in each pen must be of the same litter.

51. All Sows farrowed before 1897 shall be certified to have had of live Pigs within six months preceding the first day of exhibition in-Pig at the time of entering, so as to produce a litter of Pigs, far their proper time, before the 1st of September following. In the in-Pig Sows the Prize will be withheld until the Exhibitor at furnished the Secretary with a certificate of farrowing as above.

52. All Pigs exhibited with a Sow shall be her own produce, of litter, and not exceeding two months old at the time of the Show.

53. No Sow above 18 months old that has not produced a litter of Pigs shall be eligible to compete in any of the Classes.

54. Any Animal in the Pig Classes found to be artificially coloured disqualified.

CIDER.

See Entry-Form for Conditions and Regulations.

CHEESE, BUTTER, AND CREAM.

55. Cheese, Butter (except in Class 165), and Cream, will be received in the Yard on Thursday and Friday, May 20 and 21, from 7 A.M. to 6 P.M. and must be in their proper place in the Showyard by 6 o'clock in the evening, May 21, as they will be judged on Saturday.

56. The Butter in Class 165 must be delivered to the Society's store on or before April 26.

57. Professional Teachers are not eligible to compete in the Cheese and Butter.

58. No Exhibitor shall make more than two Entries in any one class of Cheese, or more than one Entry in any one class of Butter or Cream.

59. The Cheese, Butter, or Cream must (except in the Students' Classes) have been made in the Exhibitor's own Dairy by himself, his family, or servants. In the Students' Classes the Cheese or Butter must be made by the Student.

60. Any Cheese bled or marked will be disqualified. Any mark on the Butter or its cloth, or on the jars containing the Cream, will disqualify. This does not apply, in the case of Butter, to the pattern with Scotch hands.

61. The winners of First Prizes in the Cheese Classes 152 to 158 shall give one Cheese (which the Judges will select) to the Council for disposal.

62. Exhibitors must make their own arrangements for the return of Exhibits in the Cheese Classes, as the Society cannot undertake to return Butter, Cream, and Cream Cheese must be sent to the Show in no other than able pots, cases, or boxes, as it will not under any circumstances be returned after the close of the Show. Exhibitors must state upon their Entry whether they will unpack their cheeses on its arrival in the Yard, or desire the Society to do so.

63. Exhibitors must very carefully answer the questions on the Entry

BUTTER-MAKING COMPETITIONS.

64. Cream will be supplied free of charge, and the Butter will be the property of the Society.

65. The Society will supply Competitors with churns, &c., or they can bring their own appliances if they prefer to do so.

66. Competitors who work the Butter with their hands will be disqualified.

67. Professional Teachers, Makers or Vendors of Churns, or persons in any way representing the interests of Makers or Vendors of Churns, are not eligible to compete for any Prize given in the Butter-Making Competitions in the Showyard, nor are previous winners of the Society's Champion Gold Medal.

68. Competitors must attend at the Working Dairy *one hour* before the time stated on the Programme for the commencement of each Competition.

69. A Prize winner at the Society's current meeting in the Butter-Making Competitions shall not be eligible to receive another Prize of equal or less value in a corresponding Class at the same meeting.

HORSE-SHOEING COMPETITIONS.

70. Competitors must attend at the Shoeing Ring in the Showyard at 10 o'clock on the day of Competition.

71. Each Competitor must make and fix a fore-shoe, and make but not fix, a hind-shoe, in the Showyard, having previously taken off the old fore-shoe.

72. A Competitor must bring his own Tools, Nails, and a Striker, who must not be a Competitor or a qualified smith, but the Society will provide forges, anvils, flat iron, and fuel.

73. All fore-shoes for Nag Horses must be fullered.

74. No Man who has already won a First Prize given by the Society for Horse-Shoeing will be eligible to compete again in the same class.

SHEEP-SHEARING COMPETITIONS.

75. Competitors must attend at the Shearing Ring in the Showyard at 10 o'clock on the day of Competition.

76. Competitors must provide their own tools.

77. No man who has already won a First Prize given by the Society for Sheep-Shearing will be eligible to compete again in the same class.

MILKING COMPETITION.

78. Competitors will be advised previous to the Exhibition as to the days and hours of the Competition, and they must attend at the Working Dairy at the time stated.

79. No person who has already won a First Prize given by the Society for milking will be eligible to compete again in the corresponding Class.

ADJUDICATION OF PRIZES.

80. By the Bye-Laws of the Society the Judges are instructed as follows, and Entries are received subject to this:—

a. Not to award any Prize or Commendation unless the Entry possesses sufficient merit.

b. Not to award a Prize to any Horse or Mare unless it is free from unsoundness likely to be transmitted to its progeny; or if a Gelding, unless free from soundness; in either case, an accident having temporary consequences only accepted.

c. In awarding Prizes to Cattle, Sheep, and Pigs, to decide according to the relative merits of the Animals for Breeding purposes, and not to take into consideration their present value to the butcher.

d. To draw the attention of the Stewards to any Exhibit that is improperly prepared for Exhibition or is wrongly entered.

e. To record the number of the Entries which may in the future possess sufficient merit to succeed to vacancies caused by disqualification, Entries so placed in a Reserved List shall, in the event of any disqualification, succeed to the Prize or Prizes according to the Judge's decision.

f. To deliver to the Stewards of the respective departments the signed, stating the numbers to which the Prizes are adjudged, Reserve Numbers, immediately after they have completed their duties upon any Class.

Should any question arise upon which the Judges may desire an opinion, the Stewards shall provide them with a Referee.

PAYMENT OF PRIZES.

81. Cheques for the Prizes awarded (except where further qualification of an animal is required) will be drawn at the meeting of the Finance Committee held in July, 1897, and will then be forwarded by post to the persons to whom they have been awarded.

RAILWAY ARRANGEMENTS.

The Railway Companies offer special facilities for the conveyance of Stock to and from the Show, and particulars of these will be furnished to Exhibitors by the Secretary.

Telegraphic Address—"FLOWMAN," BATH.

ROUTHAMPTON MEETING,

MAY 24, 25, 26, 27, AND 28, 1897.

PRIZES FOR POULTRY.

	First Prize.		Second Prize.		Third Prize.	
	£	s.	s.	d.	s.	d.
N—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
MA—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
SEAN—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
OUTH ROCK—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
DOTTE—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
IGTON—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
BCA—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
ORN—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
BURG—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
ING (Coloured)—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
ING (Silver Grey)—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
ING (White or Cuckoo)—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
ENGLISH GAME—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
AN GAME—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
AY—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
CH—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0
OTHER DISTINCT BREED (not previously mentioned)—Cock	1	10	15	0	10	0
—Hen	1	10	15	0	10	0

CHICKENS OF 1897.

in, Brahma, Langshan, Plymouth Rock, Wyandotte, or Orpington—Cockerel	1	10	15	0	10	0
—Pullet	1	10	15	0	10	0
orca, Leghorn, Hamburg, or French—Cockerel	1	10	15	0	10	0
—Pullet	1	10	15	0	10	0

CLASS	First Prize.	Second Prize.	Third Prize.
	£ s.	s. d.	s. d.
39.—Dorking, Game, Malay, or any other Distinct Breed (not previously mentioned)—Cockerel	1 10	15 0	10 0
40.—Ditto—Pullet	1 10	15 0	10 0
LIVE TABLE POULTRY.			
41.—Pair of Cockerels of 1897, of any Pure Breed.	1 10	15 0	10 0
42.—Ditto—Pullets	1 10	15 0	10 0
43.—Pair of Cockerels of 1897, of a first cross from any Pure Breeds	1 10	15 0	10 0
44.—Ditto—Pullets	1 10	15 0	10 0
EXTRA PRIZE.			
A SILVER CUP is offered by Mr. W. B. Tegetmeier for the Best Pair of Cockerels or Pullets in Class 41, 42, 43, or 44.			
SELLING CLASSES.			
45.—ANY DISTINCT BREED—Cock (<i>price not to exceed 1l. 1s.</i>)	1 10	15 0	10 0
46.—ANY DISTINCT BREED—Hen (<i>price not to exceed 1l. 1s.</i>)	1 10	15 0	10 0
DUCKS, GEESE, AND TURKEYS.			
47.—DRAKE or DUCK (Aylesbury)	1 10	15 0	10 0
48.—Ditto (Rouen)	1 10	15 0	10 0
49.—Ditto (Pekin)	1 10	15 0	10 0
50.—GANDER	1 10	15 0	10 0
51.—GOOSE	1 10	15 0	10 0
52.—TURKEY—Cock	1 10	15 0	10 0
53.—Ditto—Hen	1 10	15 0	10 0
DEAD TABLE POULTRY.			
<i>(To be forwarded alive, and killed and plucked by a Poulterer employed by the Society. See Regulation 11.)</i>			
54.—Pair of Cockerels of 1897, of any Pure Breed	1 10	15 0	10 0
55.—Ditto—Pullets	1 10	15 0	10 0
56.—Pair of Cockerels of 1897, of a first cross from any Pure Breeds	1 10	15 0	10 0
57.—Ditto—Pullets	1 10	15 0	10 0
58.—Pair of Ducklings of 1897	1 10	15 0	10 0
EXTRA PRIZE.			
A SILVER CUP is offered by Sir Walter Gilbey, Bart., for the Best Pair of Cockerels, Pullets, or Ducklings in Class 54, 55, 56, 57, or 58.			

POULTRY.

CONDITIONS AND REGULATIONS.

CHARGES, &c.

1. Exhibitors may make an unlimited number of Entries in each Class on payment of fees as follows:—

Members of the Society elected on or before January 26, 1897, subscribing not less than £1 annually	2s. 6d. per entry.
Non-Members	5s. „

The above fees include coops, food, and attendance.

N.B.—The above Fees must be sent with the Entries, or no notice will be taken of the latter.

2. All Entries must be made on the printed forms, to be obtained of the Secretary THOS. F. PLOWMAN, 4, Terrace Walk, Bath), and such forms must be correctly filled up and returned to the Secretary, together with all fees due, on or before April 30. Exhibitors are requested to carefully examine the List of Prizes and Conditions, as the Society cannot be responsible for any errors made by Exhibitors in the Entry-forms, and birds entered in a wrong Class will be necessarily excluded from competition. No alterations can be made in Entry-forms after they have been received by the Secretary.

3. The Council reserve the right to refuse the Entries of any person.

4. Exhibitors must state the price and breed of their birds on their Entry-forms.

SHOWYARD.

5. All birds must be in the Showyard on *Saturday, May 22*, and no bird can be removed before *Friday, May 28*, at 7 P.M. Any Exhibitors who send for their birds must do so between 7 and 8 P.M. on that day.

6. All carriage must be prepaid to Southampton Railway Station, otherwise the birds will not be received at the Exhibition; but they will be conveyed free of expense from the Station to the Showyard and back.

7. No Exhibitor or Servant will be allowed into the tent until the birds have been judged.

8. The Poultry Tent will not be open to the public until 2 o'clock on the first day of the Exhibition.

9. One Admission Ticket, available whenever the Show is open to the public, will be given to each Exhibitor whose Entry-fees amount to 1*l.* and upwards.

TABLE POULTRY.

10. In these Classes (41 to 44 and 54 to 58) quality for the table will be considered before mere weight. The date of hatching must be given, and in the case of cross-bred birds, the breeds of the parents.

11. In Classes 54 to 58 the whole of the birds will be first exhibited alive. They will all be killed on the evening of *Monday, May 24*, and trussed by a qualified Poulterer, the Prizes being finally awarded to the dead birds. These will then all be exhibited, but will be withdrawn from exhibition when considered necessary, and, if unsold, will be returned to Exhibitors after 6 P.M. on *Wednesday, May 26*. Exhibitors are recommended to put a reasonable price upon their Exhibits in these classes so as to promote the sale of them.

SALES.

12. All birds may be claimed, at the price put upon them, any time after 4 o'clock on Monday, May 24, and a sale *must take place* if the price stated be paid to the Clerk in the Poultry Office at the time of claiming. *No alteration can be made in the prices stated on the Entry-forms and in the Catalogue until after Wednesday, May 26, when the price may be reduced on payment to the Stewards of 1s. per pen on each alteration.* Birds must be *sold in pens*, and the price stated must include the basket. A charge of 10 per cent. will be made for all birds sold. The persons who have the management of the sales cannot take charge of birds which are disposed of privately.

AWARDS.

13. Except under a special recommendation from the Judges, no Second Prize will be given in any of the Classes unless there are three Entries, and no Third Prize unless there are six Entries.

DISQUALIFICATIONS.

14. The Judges are empowered to withhold a prize or prizes where birds are not considered of sufficient merit, or to disqualify any that have been clipped, drawn, trimmed, marked, or dyed, and an Exhibitor detected in a false statement as to the age, &c., of any bird, or in any other practice calculated to deceive or mislead the Judges or Stewards, shall forfeit all or any prizes awarded to him or her at the Show, and will be disqualified from competing at any future Show of the Society.

15. Unhealthy birds will not be exhibited, but will be immediately returned to their owners, and the fees will be forfeited.

PROTESTS.

16. In order to check frivolous and vexatious protests, no protest will be entertained unless accompanied by a deposit of 1*l.* in each case; and in case the protest is not substantiated, the deposit may be forfeited to the funds of the Society. All protests must be made before 12 o'clock (noon) on Tuesday, May 25.

FORFEITS.

17. Persons entering birds, and failing to send the same to the Exhibition will forfeit the entrance fee for each pen so left vacant.

GENERAL.

18. All birds shown must be *bonâ fide* the property of the Exhibitor.

19. For each pen entered, the Exhibitor will receive a Label, on the reverse side of which he must legibly write his name and address for the return journey.

20. All Eggs laid at the Exhibition will be destroyed.

21. The Stewards pledge themselves to take every care of the birds exhibited, but neither they nor the Society will in any case be responsible for any accident, loss, or damage, from whatever cause arising, the exhibits being entered at the sole risk of the Exhibitors, and Exhibitors will be required to hold the Society harmless in the event of loss.

22. In case of death of any bird during the Exhibition, it will be sent back for the inspection of the Exhibitor.

23. The Poultry Department is subject to the rules and regulations of the Society and its officers.

* * * *The use of properly-constructed poultry baskets will facilitate the safe and speedy conveyance of the specimens to and from the Exhibition.*

The Society cannot, under any circumstances, undertake to send telegrams to Exhibitors as to Judges' Awards.

Applications for Catalogues (price 1s. each) and printed lists of Awards should be made to the Publishers, Messrs. W. LEWIS AND BONS, Herald Office, Bath.

Year.	Place Visited.	Local Subscrip- tion.		Prizes.		Local Real- dents.	Total Contri- bution.	President.	Admissions.		Total.
		£	£	Local Com- mittee.	Local Societies.				On 24. 6d. days.	On 14. Days.	
1852	Taunton	210	£	£	£	£	£	Lord Portman.	..	..	..
1853	Plymouth	450	..	..	..	..	210	Sir T. D. Acland, Bart.	..	..	..
1854	Bath	450	..	..	..	..	450	William Miles, M.P.	..	..	..
1855	Tiverton	450	..	..	..	..	450	Earl Fortescue	..	..	..
1856	Yeovil	450	..	..	..	..	450	C. A. Moody, M.P.	..	..	..
1857	Newton Abbot	700	..	..	..	..	700	Lord Courtenay	..	..	..
1858	Cardiff	800	..	..	..	..	800	Lord Courtenay	..	..	..
1859	Barnstaple	800	..	..	..	..	966	John Sillifant.	..	..	..
1860	Dorchester	900	85	..	..	£1	900	Lord Rivers	10,709	11,949	22,658
1861	Truro	900	..	..	..	..	900	J. W. Buller, M.P.	15,201	14,220	29,421
1862	Wells	900	..	..	..	..	900	Sir T. D. Acland, Bart.	10,578	4,775	15,353
1863	Exeter	900	..	..	..	..	900	Marquis of Bath	15,635	19,284	34,919
1864	Bristol	1000	109	..	..	60	1156	Earl Fortescue	22,377	65,678	88,055
1865	Hereford	900	358	..	..	..	1258	Lord Taunton.	16,575	35,261	51,836
1866	Salisbury	900	57	..	..	..	957	Earl of Portsmouth	7,288	18,737	26,025
1867	Salisbury	..	..	..	..	..	900	J. Tremayne	7,502	16,702	24,204
1868	Falmouth	900	..	..	..	..	900	Sir J. T. B. Duckworth, Bart	11,393	19,495	30,888
1869	Southampton	900	132	..	..	18	1050	Earl of Carnarvon	15,349	41,290	56,639
1870	Taunton	900	..	..	..	..	900	Sir S. H. Northcote, Bart., C.B., M.P.	17,952	33,653	51,605
1871	Guildford	900	110	..	..	..	1010	Earl of Cork	10,656	23,406	34,062
1872	Dorchester	800	..	..	..	10	810	Duke of Marlborough, K.G.	12,791	21,517	34,308
1873	Plymouth	800	..	..	400	..	1200	Earl of Mount-Edgumbe	16,665	45,744	62,409

ANNUAL EXHIBITIONS—continued.

Year.	Place Visited.	Local Subscription.	Prize.			Total Local Contribution.	President.	Admissions.		
			Local Committee.	Societies.	Individuals.			On 22. day.	On 12. Days.	Total.
1874	Bristol	£ 800	£ 403	£ ..	£ ..	1203	Sir Massey Lopes, Bart., M.P.	37,329	72,791	110,120
1875	Croydon.	800	245	..	..	1045	R. Benyon, M.P.	14,518	26,028	40,546
1876	Hereford	800	381	..	..	1181	Earl of Ducie	16,396	32,645	49,041
1877	Bath	800	215	..	..	1015	Marquis of Lansdowne	27,625	48,852	76,477
1878	Oxford	800	..	170	6	976	Earl of Jersey.	12,414	26,995	39,409
1879	Exeter	800	..	..	10	810	Earl of Morley	14,634	40,533	55,167
1880	Worcester	800	..	254	..	1054	Earl of Coventry	8,415	37,675	46,090
1881	Tunbridge Wells	800	245	34	..	1079	Marquess of Abergavenny	13,368	33,236	46,604
1882	Cardiff	800	200	198	17	1215	Lord Tredegar	23,941	38,690	62,631
1883	Bridgwater	800	78	..	..	878	Lord Brooke, M.P.	17,171	31,241	48,412
1884	Maidstone	800	310	33	75	1218	Viscount Holmesdale.	13,501	31,053	44,554
1885	Brighton	800	227	33	82	1142	Viscount Hampden	9,637	39,851	49,488
1886	Bristol	800	525	..	..	1325	Lord Carlisle	29,580	70,999	100,579
1887	Dorchester	800	..	112	..	912	Earl of Ilchester	8,860	29,846	38,706
1888	Newport (Mon.)	800	100	..	..	900	Lord Tredegar	14,878	38,567	53,445
1889	Exeter	800	..	..	10	810	Lord Clinton	16,405	36,195	52,600
1890	Rochester	800	294	..	26	1120	Earl of Darnley	8,480	48,314	51,794
1891	Bath	800	50	103	100	1053	Earl Temple	23,510	52,185	75,695
1892	Swansea	800	200	100	10	1110	Sir J. T. D. Llewellyn, Bart.	18,364	54,609	72,973
1893	Gloucester	800	400	..	..	1200	Lord Fitzhardinge	14,272	40,368	54,640
1894	Guilford	800	174	..	..	984	Earl of Onslow	8,671	29,813	38,484
1895	Taunton	800	85	..	10	1055	Viscount Portman	13,181	30,111	43,292
1896	St. Albans	800	152	..	10	952	Earl of Clarendon	12,056	22,380	34,436
1897	Southampton	800	..	..	..	..	Lord Montagu of Beaulieu	..	..	..

The Bath and

SUMMARY OF THE CASE

DR.

WITH

RECEIPTS.		1896. ST. ALBANS.			
		£	s.	d.	
General Receipts:—					
Dividends and Interest		63	3	4	
Subscriptions from Members		1,106	0	0	
Life Compositions		60	0	0	
Journal		37	3	6	
Cancelled Cheques		6	10	8	
					1,846
Show Receipts:—					
Implements		1,561	0	0	
	£ s. d.				
Horses	436	17	9		
Cattle, Sheep, and Goats	458	5	0		
Catalogues, &c.	105	6	4		
					1,000 9 1
Poultry		103	11	4	
Horse Shoeing		11	0	0	
Arts	10	5	4		
Art Union	73	14	0		
Art-Manufactures	21	6	0		
					108 5 4
Cheese and Butter		136	8	1	
Working Dairy		149	14	0	
Sheep Shearing		5	15	0	
Cider		11	2	6	
Admissions		2,579	12	6	
Refreshment Contracts		500	0	0	
Unapportionable:—					
Cloak Rooms, &c.	48	1	0		
Stand Fittings	204	11	5		
					256 12 5
Subscription from Southampton for 1897 Show		800	0	0	
					7,217
Schools					3,265
Experiments					350
Sale of India Stock (£1751 19s. 2d.)					1,957
Balance in Bank, Jan. 1, 1895					14,637
Balance due to Bank, Dec. 31, 1895					
					£ 14,637

outhern Counties Society.**THE YEAR ENDING DEC. 31st, 1896.****STATEMENT FOR 1895.****Cr.**

PAYMENTS.	1896. ST. ALBANS.		1895. TAUNTON.	
	£	s. d.	£	s. d.
General Expenses:—				
Salaries	775	0 0	775	0 0
Rent, Postage, Stationery, &c.	268	11 1	295	13 7
Journal	421	2 2	438	3 10
		1,464 13 3		1,508 17 5
Show Expenses:—				
Implements	555	9 3	656	15 1
Horses	1,133	6 6	940	0 5
Cattle, Sheep, and Goats	2,116	4 10	2,044	0 3
Fodder, &c.	405	11 10	333	4 6
	3,655	3 2	3,317	5 2
Poultry	272	3 6	260	17 6
Horse Shoeing	81	1 11	84	10 1
Arts	196	12 3	252	17 0
Art Union	168	9 9	182	16 2
Art-Manufactures	69	10 10	64	6 4
	434	12 10	499	19 6
Music	250	12 0	181	8 10
Horticulture	155	16 9	189	17 1
Cheese and Butter	388	15 9	465	15 9
Working Dairy	529	19 11	544	8 9
Sheep Shearing	30	12 6	32	15 1
Cider	51	5 4	55	16 4
Bees	10	0 0	10	0 0
Public Announcements	418	3 11	481	0 3
Refreshment Contracts	153	19 4	182	8 2
Unapportionable:—				
Stand Fittings	92	0 0	101	4 4
Erection of Offices, &c.	893	3 10	848	2 6
Carriage of Plant (2 years)	320	4 9	..	..
Police	110	12 6	78	1 6
Miscellaneous	331	10 6	311	7 1
	1,747	11 7	1,338	15 5
		8,735 7 9		8,301 13 0
Schools . . . . .	..	2,991 7 10	..	2,707 1 6
Experiments . . . . .	..	686 17 8	..	799 8 0
		13,878 6 6		13,316 19 11
Balance due to Bank, Jan. 1, 1896 . . . . .	..	338 4 6	..	..
Balance in Bank, Dec. 31, 1896 . . . . .	..	420 12 11	..	..
		£ 14,637 3 11		13,316 19 11

Audited and found correct,
ALBERT GOODMAN, F.C.A.,
Auditor.
 January 15th, 1897.

Passed by Council,
 January 24th, 1897.
THOS. J.]

The Bath and U**DR. CASH ACCOUNT FOR THE YEAR ENDING**

RECEIPTS.		1896. ST. ALBANS.	
		£ s. d.	£ s. d.
DIVIDENDS AND INTEREST:—			
Consols		96 0 0	
New Zealand Stock		53 1 0	
India Stock		245 14 8	
Canada Stock		69 4 10	
Queensland Stock		106 7 8	
New South Wales Stock		67 15 2	
			638
SUBSCRIPTIONS FROM MEMBERS:—			
Arrears		17 14 0	
Governors		235 10 0	
Subscribers of £1 and upwards		828 6 0	
Ditto of 10s.		23 10 0	
			1,105
LIFE COMPOSITIONS . . . . .		..	60
JOURNAL:—			
Sales		12 7 7	
Advertisements		24 15 11	
			37
CANCELLED CHEQUES . . . . .		..	6 1
IMPLEMENTS:—			
Entry Fees		69 10 0	
Fees for Space:—			
Machinery-in-Motion Shedding		334 5 0	
Ordinary Shedding		414 12 0	
Miscellaneous Shedding		213 15 0	
Boarded Do.		213 7 6	
Seed Do.		22 10 0	
Uncovered Ground		136 3 0	
Catalogue Fees		127 17 6	
			1,564
Carried forward . . . . .		..	2,410 1

outhern Counties Society.**6, WITH COMPARATIVE STATEMENT FOR 1895.**

PAYMENTS.	1896.		1
	ST. ALBANS.		TA
	£ s. d.	£ s. d.	£
GENERAL:—			
Salaries:—			
Secretary (including Clerks, Gas, Coal, Lodgings at Show, &c.)	700 0 0		70
Auditor	20 0 0		2
Consulting Chemist	30 0 0		3
Consulting Botanist	25 0 0		2
		775 0 0	77
 Printing	39 2 6		
Stationery and Finance Books	40 18 9		
Postage, Telegrams, Cheque and Receipt Stamps	79 2 0		
Rent of Offices	26 0 0		
Travelling Expenses	24 13 4		
Carriage of Goods	11 8 9		
Directories and Reference Books	5 9 6		
Finance Committee's Expenses	8 8 0		
Subscriptions	3 3 0		
Repairs, &c.	3 1 3		
Hire of London Rooms for Councils and Committees	4 4 0		
Grant to Mrs. Jones (widow of late Foreman of Plant)	23 0 0		
Grant to Railway Benevolent Institution . . . . .	..	
		268 11 1	26
 JOURNAL:—			
Editor	100 0 0		
Associate Editor	100 0 0		
Printing and Binding	153 0 9		
Plans	3 14 6		
Journal Distribution	27 15 7		
Postage, Stationery, and Reference Books	6 9 4		
Payments to Authors	30 2 0		
		421 2 2	42
 IMPLEMENTS:—			
Shedding	450 6 9		54
Stewards and Assistants	66 12 0		6
Printing, Stationery, &c.	38 10 6		4
		555 9 3	
 Carried forward		£ 2,020 2 6	

ST. ALBANS MEETING, 1896.

(cxiv)

DR.

CASH ACCOUNT—continued.

RECEIPTS.	1896. ST. ALBANS.		1895 TAUNTON
	£	s. d.	£
Brought forward . . .	..		3,410 17 6
HORSES, CATTLE, SHEEP, AND GOATS:—			
Horses:—Entry Fees . . .	189	0 0	114
Fines and Forfeits . . .	12	0 0	2
Grand Stand Admissions . . .	113	17 9	90
Special Prizes . . .	122	0 0	42
	436	17 9	249
Cattle, Sheep and Goats:—			
Entry Fees . . .	342	15 0	266
Fines . . .	26	0 0	12
Special Prizes . . .	89	10 0	140
	458	5 0	419
Catalogues . . .	80	14 10	80
Manure and Fodder . . .	24	11 6	5
	105	6 4	86
			1,000 9 1
			755
POULTRY:—			
Entry Fees . . .	101	1 0	95 1
Commission on Sales . . .	2	10 4	6
			103 11 4
			95 1
HORSE-SHOEING:—			
Entry Fees . . .			11 0 0
Special Prizes . . .			28
			39
Carried forward . . .	..	£	4,525 17 11

CASH ACCOUNT—continued.

On

PAYMENTS.	1893. St. ALBANS.			1893. TAUNTON.		
	£	s	d.	£	s	d.
Brought forward . . . .	..			2,020	2	6
CATTLE, SHEEP, AND GOATS:—						
Prizes	£	s	d.			
Shedding and Grand Stand	620	0	0			520 0 0
Stewards and Assistants	444	5	6			351 10 11
Judges	46	13	6			45 3 8
Miscellaneous	19	7	6			23 4 4
	3	0	0			0 1 6
				1,133	6	6
Prizes	£	s	d.			
Less deferred	1,210	10	0			1,231 10 0
	30	0	0			55 0 0
Prizes	1,180	10	0			1,176 10 0
Shedding and Canvas	440	0	0			457 0 0
Stewards and Assistants	311	2	2			234 14 9
Judges	36	5	2			30 13 1
Grant to British Goat Society	132	7	6			134 18 11
Fees Returned, &c.	10	0	0			2 3 6
	..			2,116	4	10
us, &c.	41	11	11			23 7 9
rd of Fodder and Assistants	201	4	6			180 13 6
Horse hire	29	19	8			23 9 6
inary Inspector	17	15	6			26 13 6
tes	8	9	7			9 12 7
ing and Stationery	60	18	8			56 10 4
shments to Judges	10	9	0			13 17 4
red Prizes of 1895	25	0	0			..
				405	11	10
				3,655	3	2
Y:—						
nee, Staging and Sheds	59	14	3			56 17 6
rd and Assistants	23	5	10			18 10 11
s	12	12	2			13 17 6
ng and Stationery	166	5	0			162 15 0
re, Hampers, &c.	11	6	3			6 13 9
	..			273	3	6
						260 17 6
HOEING:—						
s	22	0	0			27 17 6
s	18	18	1			21 7 6
s, Forges, Coals, Horses, and Printing	5	11	7			3 6 9
ing	30	17	3			28 10 0
rd and Assistants	3	15	0			3 6 4
				81	1	11
Carried forward . . . . .	..			£	6,028	11 1

ST. ALBANS MEETING, 1896. (cxvi)

DR. CASH ACCOUNT—continued.

RECEIPTS.		1896.		18
		ST. ALBANS.		TAC
		£	s. d.	£
Brought forward		..		4,525 17 11
ARTS:—				
Commission on Picture Sales, &c.		2	18 4	4
Catalogues		5	0 0	5
Returned on Picture		2	7 0	
				10 5 4
ART UNION:—				
Sale of Tickets		65	0 0	77
Excess paid on Prizes.		8	14 0	5
Cash money		..		0
				73 14 0
ART-MANUFACTURES:—				
Fees for Space		..		24 6 0
				123
CHEESE AND BUTTER:—				
Entry Fees		91	17 6	12
Cheese and Butter Sales		26	10 7	2
Special Prizes		18	0 0	6
				136 8 1
WORKING DAIRY:—				
Admissions		9	17 6	5
Entry Fees, Competitions		36	2 6	1
Ditto Dairy Appliances		31	15 0	5
Ditto Butter Test Prizes		40	19 0	1
				108 16 6
Special Prizes		12	0 0	1
Premium on Produce Sales.		10	0 0	1
Sale of Thatching Straw		..		1
				140 14 0
Carried forward				4,911 5 4

CASH ACCOUNT—continued.

CR.

PAYMENTS.	1896. ST. ALBANS.		1895. TAUNTON.	
	£	s. d.	£	s. d.
Brought forward . . . . .	..	6,028 11 1		
and Fittings	57	3 11	56	4 6
d and Assistants	47	7 5	70	7 0
g and re-packing Pictures	41	13 10	38	6 5
Agents and Carriage	40	4 1	79	6 7
g and Stationery	10	3 0	8	12 6
		196 12 3	252	17 0
ON:—				
g Purchased	156	9 3	166	9 10
g and Stationery	6	0 0	6	8 10
galing	2	2 0	2	2 0
ssion on Sale of Tickets	3	18 6	7	15 6
		163 9 9	182	16 2
UFACTURES:—				
and Fittings	59	6 0	56	4 4
d and Assistants	7	8 4	5	11 6
g	2	16 6	2	10 6
		69 10 10	64	6 4
and their Fares	230	0 0	158	1 3
g Band Stand and Seats	18	2 0	16	12 7
d and Assistants	2	10 0	6	15 0
		250 12 0	181	8 10
LTURE:—				
ies to Gardeners	80	0 0	102	0 0
g and Repairing Tent and Staging	55	17 3	63	2 0
d and Assistants	19	19 6	18	7 1
g, Stationery, Carriage, &c. . . . .	..		6	8 0
		155 16 9	189	17 1
ND BUTTER:—				
.	11	7 5	18	17 0
.	260	0 0	298	0 0
is and Assistants	13	6 1	11	7 2
g	95	13 3	125	7 10
g, Stationery, Carriage, &c.	3	9 0	4	9 9
able for Butter	5	0 0	7	14 0
		338 15 9	465	15 9
DAIRY:—				
is and Assistants	81	2 1	63	5 1
and Demonstrators	51	6 8	61	4 1
g	298	14 0	293	18 4
g, Stationery, Postage, and Insurance	6	6 10	9	9 10
s, Carriage, &c.	16	9 8	18	10 6
ult, Ice, &c.	68	19 2	88	19 2
	7	1 6	9	1 9
		529 19 11	544	8 9
Carried forward . . . . .	..	7,728 8 4		

DR.

CASH ACCOUNT—*continued.*

RECEIPTS.	1896. ST. ALBANS.						1897 TA07
	£	s.	d.	£	s.	d.	£
Brought forward . . . . .	..			4,911	5	4	
SHEEP SHEARING:—							
Entry Fees . . . . .	..			5	15	0	9
CIDER:—							
Entry Fees	11	2	6				9
Special Prizes . . . . .	..						18
				11	2	6	26
ADMISSIONS TO SHOW-YARD:—							
Admissions at 2s. 6d.	1,387	15	0				1,436
Ditto at 1s.	1,039	6	0				1,373
Children at 1s.	30	15	0				46
Ditto at 6d.	43	1	6				66
Season Tickets	78	15	0				76
				2,579	12	6	3,094
SHOW REFRESHMENT CONTRACTS:—							
Sale Premiums and Buildings . . . . .	..			500	0	0	531
SHOW RECEIPTS (UNAPPORTIONABLE):—							
Stand-fittings	208	11	5				215
Cloak Room, Parcels Office, Chairs, Photo-graphs, &c.	48	1	0				51
				256	12	5	266
SUBSCRIPTIONS FROM TOWNS:—							
Southampton, for 1897 Show . . . . .	..			800	0	0	800
Carried forward . . . . .	..			29,044	7	9	

CASH ACCOUNT—continued.

CR.

P A Y M E N T S.	1896. ST. ALBANS.		1895. TAUNTON.	
	£	s. d.	£	s. d.
Brought forward . . . . .	..	7,788 8 4		
E A R I N G :—				
.	17	0 0	20	10 0
.	7	2 0	5	15 0
.	1	0 0	1	0 0
g and Printing	5	10 6	5	10 1
		30 12 6		32 15 1
g and Fittings.	28	13 6	9	4 4
l and Assistants	9	7 0	3	0 0
.	7	10 3	5	15 2
.	1	2 10	36	0 0
g, &c.	4	11 9	1	16 10
		51 5 4		55 16 4
rom Council for Bee Tent . . . . .	..	10 0 0	10	0 0
ANNOUNCEMENTS:—				
ising	163	4 11	259	1 7
ing	159	12 11	127	18 0
g	91	6 1	90	0 8
Placard-Frame Stores	4	0 0	4	0 0
		418 3 11		481 0 3
FRESHMENT CONTRACTS:—				
ig	150	5 4	176	17 2
g, &c.	3	14 0	5	11 0
		153 19 4		182 8 2
PENSES (UNAPPORTIONABLE) —				
g Offices and other Buildings	739	5 9 1	848	2 6
Hoarding	163	18 1 1	..	
e of Plant	147	12 5	..	
itto (1895)	172	12 4	..	
l of Works	14	5 6	13	5 0
ittings	92	0 0	101	4 4
on of Telegraph Wires	10	17 4	3	5 8
ice of Plant	4	10 0	4	10 0
Furniture	28	4 6	25	6 9
oom	5	5 0	5	5 0
pers	65	14 4	55	13 9
in, Messengers, &c.	20	17 11	15	15 8
ls of Finance and Treasurer	21	19 8	25	10 7
Office and Treasurer's Clerks	49	9 10	41	13 4
.	110	12 6	76	1 6
&c.	2	4 9	3	8 10
ues for Press and Officials	19	2 6	7	10 0
se of Plant	25	16 1	58	9 3
g and Stationery	37	17 1	36	13 11
ision on Sale of Season Tickets.	4	15 3	3	5 10
and Sundries	20	10 9	12	15 6
		1,747 11 7		1,336 15 5
Carried forward . . . . .	..	£ 10,300 1 0		

ST. ALBANS MEETING, 1896. (CXX)

Dr. CASH ACCOUNT—*continued.*

RECEIPTS.		1896. ST. ALBANS.			T.
		£	s.	d.	£
Brought forward . . .		..	9,064	7 9	
SCHOOLS:—					
SOMERSET FARRIERY:—		£	s.	d.	
Students' Fees . . .	11 10 0				2
Grant from County Council . . .	419 10 8				2
		431	0	8	
SOMERSET BUTTER:—					
Students' Fees . . .	18 10 0				1
Spectators' Admissions . . .	3 2 0				
Sales . . .	..			
		21	12	0	
SOMERSET CHEESE:—					
Students' Fees . . .	88 19 6				11
Cheese and Butter sold . . .	730 2 6				7
Sale of Cheese-making Apparatus . . .	49 18 0				
Sale of Students' Note-Books . . .	1 17 0				
		870	17	0	9
Grant from Somerset County Council . . .		300	0	0	7
DEVON BUTTER:—					
Students' Fees . . .	25 13 0				4
Spectators' Admissions . . .	7 15 3				
Sale of Appliances . . .	2 11 2				54
Grant from County Council . . .	700 0 0				55
		735	19	5	
Carried forward . . .		£	2,359	9 1	9,064 7 9

CASH ACCOUNT—continued.

Cr.

PAYMENTS.	1896. ST. ALBANS.			1895. TAUNTON.		
	£	s.	d.	£	s.	d.
Brought forward.	..		10,300 1 0			
RIERY:—	£	s.	d.			
and Fittings	1	2	0	79	11	3
Instructor's Travelling	132	9	9	93	14	0
cc.	18	5	7	13	16	7
Cartage	14	13	7	7	1	3
ls.	12	1	6	8	10	6
Judges at Competition	18	19	8	7	2	0
Surgeon	31	10	0	..		
and Secretary's Travelling	1	15	5	3	19	0
Stationery, Postage, and	46	13	5	22	9	2
			277 10 11	236	3	9
TER:—						
Expenses	73	12	5	235	14	8
Time and Expenses	31	4	2	100	3	8
and Expenses	10	0	9	22	6	6
and Travelling	7	14	0	28	9	9
and other Dairy Attendants	10	6	8	59	16	2
Team	25	2	5	129	12	2
cc. &c.	10	15	8	30	16	3
	1	4	6	6	10	9
Plant	8	13	3	32	9	10
Stationery, Postages and	4	0	8	18	2	11
idents	10	10	0	60	1	0
and replacing Plant	23	9	4	5	6	5
			216 13 10	719	10	1
RESE:—						
Expenses	129	6	10	133	0	0
Time and Expenses	54	17	7	61	2	2
Expenses	15	0	0	15	0	0
ges	48	15	0	47	18	1
and Travelling	11	17	2	12	18	0
	638	17	0	726	2	6
Bandages	4	11	8	3	19	11
cc.	11	11	6	5	5	11
	3	14	9	0	6	9
Plant	4	5	5	5	2	9
Stationery, and Advertising	5	12	2	9	16	10
and Telegrams	4	14	2	5	6	6
ard	51	16	0	113	12	8
and replacing Plant	46	15	9	3	13	0
			1,081 15 0	1,143	5	1
RE:—						
Expenses	211	0	8	233	1	9
and Judges' Time and Expenses	128	17	10	128	13	6
and Travelling	24	11	6	26	5	0
andants	42	14	3	36	18	3
Team	52	9	3	63	18	3
cc. &c.	27	5	2	28	18	1
and Repairs	6	11	2	4	9	6
Plant	19	17	6	30	5	5
and Stationery	2	4	0	1	11	6
and Telegrams	8	11	2	8	19	11
idents	26	18	0	43	14	6
and replacing Plant	22	14	10	1	6	10
			573 15 4	608	2	7
Carried forward	£	2,149 15 1	10,200 1 0			

ST. ALBANS MEETING, 1896. (cxxii)

DR.

CASH ACCOUNT—continued.

RECEIPTS.		1896. ST. ALBANS.					
	<u>£</u>	<u>s.</u>	<u>d.</u>	<u>£</u>	<u>s.</u>	<u>d.</u>	<u>Tot.</u>
Brought forward	2,359	9	1	9,061	7	9	
SCHOOLS—continued.							
DORSET CHEESE:—	<u>£</u>	<u>s.</u>	<u>d.</u>				
Student's Fees	126	16	6				
Cheese and Butter Sold	526	17	9				
Sale of Students' Note-Books	2	5	0				
Grant from County Council	250	0	0				
				905	19	3	
				3,265	8	4	2.55
EXPERIMENTS (FIELD, CHEESE, AND CIDER):—							
Government Grant for 1895 . . . . .				..		350 0 0	4
Sale of India Stock . . . . .				..		1,967 7 10	
Balance in Bank, Jan. 1, 1895 . . . . .	..			14,637	3	11	12.1
Balance due to Bank, Dec. 31, 1895 . . . . .	..					
				£14,637	3	11	12.3

CASH ACCOUNT—continued.

CR.

P A Y M E N T S.	1896.			1895.		
	ST. ALBANS.			TAUNTON.		
	£	s.	d.	£	s.	d.
Brought forward	2,149	15	1	10,200	1	0
SCHOOLS—continued.						
DORSET CHEESE:—						
	£	s.	d.			
Salaries and Expenses	112	18	0			
Steward's Time and Expenses	50	4	11			
Balliffs' Wages	39	6	6			
Office Staff	11	8	6			
Milk	491	4	10			
Rennet and Bandages	9	6	3			
Coal, Salt, &c. . . .	8	0	7			
Building and Fittings	18	19	0			
Carriage of Plant	2	9	8			
Printing and Stationery	2	6	6			
Postages and Telegrams	3	7	2			
Students' Board	83	14	0			
Repairing and replacing Plant	8	9	10			
	841	12	9			
				2,991	7	10
				2,707	1	6
EXPERIMENTS:—						
FIELD:—						
Manures and Seeds	21	16	1	25	0	1
Printing and Stationery	38	13	0	20	5	3
Steward's Time, Travelling, Post- age, &c. . . .	39	6	3	38	7	4
Ditto Ditto (1894)	23	6	8	39	10	0
Secretary and Office	27	6	8	23	6	8
Consulting Chemist	14	12	6	10	8	1
Do. Botanist	45	14	9	18	0	3
Botanical Visitor . . . .	..			101	14	6
Inspection (1894) . . . .	..			276	12	2
	210	15	11			
CIDER:—						
Expert	75	0	0	78	10	0
Fittings	16	0	0	2110	0	
Office and Travelling	10	2	2	9	6	8
Printing	18	2	9	18	13	2
Deputation to St. Brieuc . . . .	..			22	2	9
	119	4	11	150	2	7
CHEESE:—						
Expert and Assistant	281	14	6	282	5	3
Board and Lodgings, and Carriage	13	7	6	31	9	10
Printing and Publishing	31	11	9	31	11	6
Secretary and Office	27	6	8	27	6	8
Fittings	2	16	5	..		
	356	16	10	372	13	3
				686	17	8
				12,878	6	6
				12,316	19	11
Balance due to Bank, Jan. 1, 1896 . . . .	..			338	4	6
Balance in Bank, Dec. 31, 1896 . . . .	..			420	12	11
	£ 14,637	3	11	13,316	19	11

ereby certify that I have examined the foregoing accounts for the year 1896, compared the
ts with the vouchers, and found them all in order and correct.

1. 15th, 1897.

ALBERT GOODMAN, F.C.A.,

Auditor.

Passed by Council,

Jan. 26th, 1897.

THOS. F. FLOWMAN,

Secretary

ST. ALBANS MEETING, 1896.

ST. ALBANS MEETING, 1896.

ASSETS AND LIABILITIES TO DECEMBER 31st, 1896, WITH COMPARISON FOR 1895.

[illegible]

Bath and West and Southern Counties Society,

FOR THE

Encouragement of Agriculture, Arts, Manufactures, and Commerce.

List of Members.

CORRECTED TO JANUARY 26TH, 1897, INCLUSIVE.

PATRON.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.

PRESIDENT

FOR 1896-97.

THE RIGHT HON. THE LORD MONTAGU OF BEAULIEU.

TRUSTEES.

RIGHT HON. SIR T. D. ACLAND, BART.

SIR J. F. LENNARD, BART.

RIGHT HON. SIR R. H. PAGET, BART.

Names thus () distinguished are Governors.*

Names thus (†) distinguished are Life Members.

*** Members are particularly requested to make the Secretary acquainted with any errors in the names or residences.*

Name.	Residence.	Sub- scriptions.
† WALES, HIS ROYAL HIGHNESS		£ s. d.
THE PRINCE OF, K.G. . . .	Sandringham, Norfolk . . . .	. .
† York, H.R.H. The Duke of, K.G.	York Cottage, Sandringham . .	. .
† Ackers, B. St. John . . .	Huntley Manor, Huntley, near Gloucester . . . . .	. .
Acland, Sir H. W., Bart., K.C.B., M.D., &c. . . .	Oxford	1 0 0
* Acland, Right Hon. Sir T. Dyke, Bart.	Killerton, Exeter	5 0 0
Acland, Alfred Dyke . . .	38, Pont Street, Belgrave Square, London, S.W.	1 0 0
* Acland, Charles T. D. . .	Holnicote, Taunton	2 0 0
† Acland, Rt. Hon. A. H. Dyke, M.P.	28, Cheyne Walk, London, S.W.	. .
Adams, E.	Horner Farm, West Luccombe, Minehead	0 10 0
(9)		

Name.	Residence.	Sub- scriptions.
Adams, George	Royal Prize Farm, Pidnell, Faringdon, Berks	£ s. d. 1 0 0
Adams, S. W., jun.	7, Boringdon Villas, Plympton St. Mary	1 1 0
*Addington, Lord	Addington House, Winslow, Bucks.	2 2 0
†Agate, Alfred	Broomhall, Horaham . . . . .	..
Aiken, J. C.	The Glen, Stoke Bishop, Gloucestershire	1 0 0
†Aitken, G. H.	Warminster . . . . .	..
Alexander, D. T.	Cardiff	1 1 0
†Allen, Col. E.	Assist. Adj. Gen.; Curragh Camp, Kildare, Ireland . . . . .	..
†Allen, James D.	Springfield House, Shepton Mallet . . . . .	..
Allen, Joseph	Springfield House, Evercreech	0 10 0
Allen and Sons	Shepton Mallet	1 0 0
Allmand, F.	Victoria Flour Mills, Wrexham	1 0 0
*†Amherst, Earl.	Montreal, Sevenoaks . . . . .	..
Anglo-Bavarian Brewery Co.	Shepton Mallet	1 0 0
Anglo-Swiss Condensed Milk Co.	Chippenham	1 0 0
Archer, C.	Trelaske, near Launceston	1 0 0
†Arkwright, J. H.	Hampton Court, Leominster . . . . .	..
Armstrong, J. D.	Vallis Farm, Frome	1 0 0
Ashburton, Lord	The Grange, Alresford, Hants	1 0 0
†Ashcombe, Lord	7, Prince's Gate, London, S.W. . . . .	..
Ashcroft, W.	13, The Waldrons, Croydon	1 0 0
Ashford, E. C., M.D.	The Moorlands, Bath	1 0 0
Aubrey, T., F.R.C.V.S.	19, Paragon, Bath	1 0 0
†Aveling, Thomas L.	Recheater . . . . .	..
Avon Manure Co.	St. Philip's Marsh, Bristol	1 0 0
Awdry, P. D.	Chippenham	1 0 0
Ayshford-Wise, Major Lovat	Watts House, Bishop's Lydeard	1 1 0
Bater, S.	Elborough Farm, Locking, Weston-super-Mare	1 0 0
Badcock, H. Jeffries.	Taunton	1 0 0
Badcock, W. L.	Pitminster Lodge, Taunton	1 0 0
Bailey, H.	St. Stephens, St. Albans	1 0 0
Bailey, J.	Nynehead, Wellington, Somerset	1 0 0
†Baillie, Evan	Filleigh, Chudleigh . . . . .	..
Bailwood, F. H. M.	Horsington, Wincanton	1 1 0
†Bainbridge, Captain J. H.	Gnaton Hall, Yealmpton, Plymouth . . . . .	..
Baker, F.	Manor Farm, Frindsbury, Rochester	1 0 0
Baker, G. E. Lloyd	Hardwicke Court, nr. Gloucester.	1 0 0

Name.	Residence.	Subscriptions.		
		£	s.	d.
L. J.	Ottershaw Park, Chertsey, Surrey			
Robert N. G.	Heavitree, Exeter			
N. H.	More Down, Mere	0	10	0
Villiam	Eastbury, Epsom Road, Guildford	1	0	0
muel	Westacott Nursery, Barnstaple	1	0	0
Captain K. R.	Branksea Island, Poole	1	0	0
, W. E.	Barvin, Potters Bar, Herts.	2	0	0
, H., and Sons	Uttoxeter	1	0	0
, A. C.	Thirsk, Yorkshire	1	0	0
A.	Wolveton, Dorchester	1	0	0
l, F.	Horsted Place, near Uckfield	1	0	0
and Perkins.	Peterborough	1	0	0
G. T.	College Farm, Finchley	1	0	0
Hon. A. H.	The Grange, Alresford, Hants	1	0	0
C. A.	Solesbridge, Chorleywood, Herts	1	0	0
, Henry	Glympton Park, Woodstock	2	0	0
Major William	Moredon, North Curry, Taunton	1	0	0
W.	Taplow House, Bucks.	1	0	0
A.	Nailstone Stud, Nailstone, near Nuneaton	1	0	0
, J. J. J.	The Lodge, Weston-super-Mare	1	1	0
John	Hackwood Farm, Basingstoke	1	0	0
t, Sir Walter, Bart.	Coates, Pulborough, Sussex	1	1	0
, C. H.	Pilton House, Barnstaple			
l, B. J. P.	Kitley, Yealmpton, Ivybridge	2	0	0
Marquess of	Longleat, Warminster			
l Wells, The Bishop of	The Palace, Wells	1	1	0
s Co.	Bath	1	0	0
t, C., jun.	Lydney Park, Glos.	1	0	0
st, Earl	Cirencester House, Cirencester	2	2	0
	Westown, Bristol	1	0	0
Col. Mount.	Coker Court, Yeovil	1	0	0
E. C., F.R.S.E.	Thornfalcon, Taunton	1	0	0
Pool, R. H.	Road Manor, Bath	1	0	0
ill, W. J.	St. Loyes, Exeter			
, Edward	Broadway, Dorchester	1	0	0
le, F. H.	Hailwell Farm, Framfield, Sussex	1	0	0
W. H.	Gelderd Road, Leeds	1	0	0
R.	Torr Grove, Plymouth			
mp, E. B.	Trevince, Scorrier, Truro	1	0	0
, M. H., M.P.	Coombe Priory, Shaftesbury	1	0	0
J. F.	Primley Hill, Paignton, Torquay	1	0	0
Stanford, J.	Pyt House, Tisbury	1	1	0
, Jos.	Down House, Dursley, Glos.	1	0	0
Brothers	Journal Office, Salisbury	1	1	0
Edward Hammond, Co.	Heybridge, Maldon, Essex	1	0	0
, R.	Englefield House, Reading	5	0	0
	Milverton, Somerset	1	0	0
, Lord	Uffington House, Stamford			
r, H. W.	Highlands, Taunton	1	0	0
R.	Abbot's Ann, Andover	1	0	0

Name.	Residence.	Sub- scriptions.
		£ s. d.
*†Best, Capt. John C. (R.N.).	Plas-yn-Vivod, Llangollen . . .	. .
†Best, Col. George	Charlton House, Ludwell, Salis- bury . . . . .	. .
Best, Major M. G.	Park House, Boxley, Maidstone .	1 0 0
Best, Captain T. G.	Dean House, Whitchurch, Hants	1 0 0
Bevington, T.	The Grove, Witham.	1 1 0
Beviss, W. Salter	Linnington, Wambrook, Chard .	1 0 0
Bigg, Thomas	Leicester House, Great Dover Street, London, E.C.	0 10 0
Birmingham, C.	Holnicote, near Minehead . . .	0 10 0
Biscoe, H. S. T.	Holton Park, near Oxford . . .	1 0 0
Blackstone and Co. (Limited)	Rutland Iron Works, Stamford, Lincoln	1 1 0
Blake, Abel	Loxbeare, Tiverton	0 10 0
Blake, William	Bridge House, Ilminster, South Petherton	1 0 0
Blinman, H. T.	Parsonage Farm, Farrington Gurney, Bristol	0 10 0
Blundell, R. C.	Benhams, Horley, Surrey . . .	1 0 0
Blyth, Sir J., Bart.	Pantheon, Oxford Street, London	1 0 0
Boby, Robert.	Bury St. Edmunds, Suffolk . .	1 0 0
Bodman, G.	Park Farm, Yatton	1 0 0
Bolitho, T. B., M.P.	Treridden, Penzance	1 0 0
†Bond, N.	Creech Grange, Wareham, Dorset	. .
Boscawen, Rev. A. T.	Ludgvan Rectory, Long Roch, Cornwall, R.S.O.	1 0 0
*Boteler, Capt. W. J. Casberd	The Elms, Taplow	2 0 0
†Boughton-Knight, A. R. . . .	Downton Castle, Ludlow . . .	. .
Bound, William	Hurstborne, Tarrant, Andover .	1 1 0
Bourne, C. H.	Wellington Road, Dudley . . .	1 1 0
Bouverie, Hon. D. P.	Coleshill House, Highworth . .	1 1 0
Bouverie, H. P.	Brymore, Bridgwater	1 0 0
†Bowen-Jones, J.	Ensdon House, Montford Bridge.	. .
†Bowerman, Alfred	Capton, Williton. . . . .	. .
Boyle, M.	Timsbury, Bath	1 0 0
Braby, E. E.	Drungewick Manor House, Rudg- wick, Horsham.	1 0 0
Bradford, Thos., and Co. . . .	Salford, Manchester	1 0 0
Bradley, W. McK.	Leylands, Meopham, Kent . . .	1 0 0
†Braikenridge, John Herman.	The Rookery, Chew Magna, Bristol . . . . .	. .
Braikenridge, W. J.	Newton House, Clevedon, Somerset	1 1 0
†Brassey, A., M.P.	Heythrop, Chipping Norton, Oxon . . . . .	. .
*†Brassey, H. L. C.	Preston Hall, Aylesford, Kent .	. .
Brendon, G.	Broomhill, Stratton, North Devon	1 0 0
Brenton, W., and Co.	Polbathic, St. Germans	1 0 0
Bristol Wagon Works Com- pany (Limited).	Lawrence Hill, Bristol	1 1 0
Britten, Admiral R. F.	Kenwick, Worcester.	1 0 0
Broadmead, T. Palfrey	Enmore Park, Bridgwater . . .	1 0 0
†Broadmead, W. B.	Enmore Park, Bridgwater . . .	. .

Name.	Residence.	Sub- scriptions.
		£ s. d.
. C.	Bishopsworth, Bristol	1 0 0
on, F. D.	Beach Borough, Hythe, Kent.	1 0 0
, E.	Cossington, Somerset	1 0 0
A.	Hill Farm Dairy, Southampton	1 1 0
J.	Marden Farm, Hertford	1 0 0
William Jeffery	Middlehill House, Box, Wilts	1 0 0
Solomon	Barton, Landrake, St. Germans	0 10 0
. G. Prideaux	Prideaux Castle, Padstow	1 0 0
J.	7, Princes Street, Yeovil	1 0 0
J. P.	Bystock, near Exmouth . . . . .	. . .
, William E., M.P.	Islington House, Dorchester . . . . .	. . .
.	Worcester	1 0 0
gham, Rev. F. F.	The Rectory, Doddiscombsleigh, Exeter . . . . .	. . .
, W. J.	Llanelly	1 0 0
l, B.	Holcombe Rogus, Wellington, Somerset	1 0 0
. C.	Land Surveyor, Shepton Mallet	1 0 0
, W. E.	Stoke Bishop, near Bristol	1 1 0
Admiral A.	Erle Hall, Plympton . . . . .	. . .
John	Pamflete, Ivybridge	1 0 0
be, E. A.	Coombe Florey, Taunton	1 0 0
s, W.	Chippenham	1 0 0
ere, Lord.	Debden Hall, Saffron Walden.	1 0 0
, R.	Cattedown, Plymouth	1 0 0
J.	Island House, Highbridge	1 0 0
C., and Sons	St. Nicholas Works, Thetford	1 0 0
, Sir C. R., Bart.	Knepp Castle, Sussex . . . . .	. . .
irs. L. E.	Ellaston, Atlantic Road South, Weston-super-Mare	1 0 0
.	Elphicks, Horsmonden, Kent.	1 0 0
, C. and W.	Torquay	1 0 0
, G., and Co.	Bath	1 0 0
orth, R. W.	Percy House, Kensington, Bath	1 0 0
Col. A. M.	Ockley Court, Dorking	1 0 0
l, C. Lee	Glewstone Court, Ross	1 0 0
, W. H.	Danney, Hassocks, Sussex.	1 0 0
F. C.	Woolcombe, Cattistock, Dorset	1 0 0
H.	Milton Clevedon, Evercreech	1 0 0
.	Collipriest, Tiverton.	1 0 0
P. W.	Cardiff . . . . .	. . .
ford, Lord	The Priory, Chewton Mendip, near Bath	2 2 0
on, Earl of	Highclere Castle, Newbury	1 1 0
.	Court-y-bel, Penarth, Glam.	1 0 0

Name.	Residence.
†Carter, E.	Puckpool House, Ryde, Isle of Wight
Carter, J., and Co.	238, High Holborn, London . . .
†Cartwright, F. F.	7, Percival Road, Clifton . . .
Carver, H. R.	West House, Chilton Polden, Bridgwater
Cary, Edmund	Pyll, Shepton Mallet
†Cary, W. H.	Steeple Ashton, Trowbridge . . .
Cater, R. B.	Bath
Cathedral Dairy Co.	Exeter
†Catt, C. W.	52, Middle Street, Brighton (Hon. Local Sec., 1885)
*Cawdor, Earl of	Stackpole Court, Pembroke . . .
Cecil, Lord A.	Orchardmains, Tunbridge
Cecil, Lord L.	Orchardmains, Tunbridge
Chadwyck-Healey, C. E. H. . . .	New Place, Porlock, Somerset . .
*Chaloner, Capt. R. G. W., M.P. .	Melksham House, Melksham, Wilts
Champion, F.	West Pennard, Somerset
†Chapman, C.	Carlecotes Hall, Dunford Bridge, near Sheffield
Chapman, Rev. H.	Donhead St. Andrew, Salisbury . .
Chapman, W. W.	Fitzalen House, Arundel Street, Strand, London
Cheetham, F. H.	Tetton House, Kingston, Taunton .
Chick, John	Compton Valence, Dorchester . . .
Chorley, W. L.	Quarme, Dunster, Somerset . . .
Chown, Richard	Holcombe Farm, Exbridge, Tiverton
Churohouse, A.	Perridge House, near Shepton Mallet
*Clarendon, Earl of	The Grove, Watford
Clark, Isaac	West Lynch, Selworthy
Clark, James	Street, Glastonbury
†Clark, J. J.	Goldstone Farm, West Brighton (Hon. Local Sec., 1885)
Clark, W. S.	Street, Glastonbury
Clarke, Joshua	Minehead
†Clarke, Capt. T. E.	Alcombe, Cote, Dunster
Clarke, W.	East Lynch, near Minehead, Somerset
Clarke, W. Hurle	Manor Cottage, Wanstrow, Somerset
Clayden, H.	Northoe, Park View, Hoddesdon .
*Clayton, Shuttleworth, and Co. .	Lincoln
Cleall, S.	Berwick, Bridport
Cleave, B. C.	Sanctuary, Crediton, Devon . . .
Cleave, W. C.	Sanctuary, Crediton, Devon . . .
Cleaver, Capt. J. H.	Bridge House Hotel, London Bridge, London, S.E.
Clerk, Edmund H.	Burford, Shepton Mallet
Clerk, Lt.-Col. R. M.	Charlton House, Shepton Mallet .

Subscriptions.

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Name.	Residence.	Subscriptions.		
		£	s.	d.
l, Lord	Ugbrook, Chudleigh			
E.	1, Holborn Place, High Holborn, London, W.C.	1	0	0
a, Lord	Heanton Satchville, Beaford, North Devon	2	2	0
, Frederick	Bristol Road, Weston-super-Mare	0	10	0
.	Brome House, West Malling, Kent	1	0	0
, John	Woodhatch House, Reigate	1	0	0
, Robert Geo.	9, Whitehall Place, London	0	10	0
R. W.	Doner's Lodge, Reigate	1	0	0
S. B.	Stanton Drew Court, Pensford	1	0	0
I. M.	Higham, Kent	1	0	0
and Sons	Frome Selwood	0	10	0
.	Gollege Farm, Wells, Somerset	1	0	0
.	Manor House, Winterbourne Stoke, Salisbury	1	0	0
W.	Westmead, Bridport	1	0	0
ourae, J. S.	Aston Ingham, near Ross	1	0	0
C.	Longhouse Farm, Oldford, Frome	1	0	0
C. R.	Hartwell House, Exeter	1	1	0
D.	Newton Ferrars, Carrington, Corn- wall	1	0	0
, J. J., M.P.	Carrow House, Norwich	1	1	0
Jas.	Redland Knoll, Bristol	1	1	0
a, E., M.P.	Roundway Park, Devizes	2	2	0
st, Symons, and Co.	Bridgwater	1	0	0
, R. H.	Pierrepont, Farnham	2	0	0
, R. T.	Earnahill, Curry Rivell, Taunton	2	2	0
Herbert F.	The Poplars, Pucklechurch, Bristol	1	0	0
.	Chevithorne Barton, Tiverton	1	1	0
C. W. Radcliffe, M.P.	Helens, Herefordshire, <i>via</i> Dymock, Glos.	1	0	0
on, H. T.	Sturford Mead, Warminster			
, G., and Son	Northgate Street, Bath	1	1	0
, G.	Radstock, Bath	1	0	0
, Joseph	Radstock, Bath	1	0	0
G. H.	Huntspill, Bridgwater	1	1	0
, P. W. D.	99, Pembroke Road, Clifton			
, R. P.	Shenstone Court, Lichfield			
J. R.	More Place, Betchworth, Surrey	1	0	0
, Thomas.	Perseverance Iron Works, Shrews- bury	1	0	0
nd Orrery, The Earl of	Marston, near Frome	2	2	0
, H. W.	Manor House, Inglescombe, Bath			
allis, F. S. W.	Linton Park, Maidstone			
H. B.	Druidstone, Castleton, Cardiff	2	0	0
.	3, Elliott Terrace, Plymouth	1	0	0
Col., the Hon. R. S.	Somerford Hall, Brewood, Staffs.	1	0	0
J. B.	Perseverance Works, Grantham	1	0	0
l, J.	Tarnock, Axbridge	1	0	0
ay, Hon. H. L.	Fox, Fowler's Bank, Exeter	1	0	0
naker, Lieut.-Col. G.	Westwood, Guildford, Surrey			

Name.	Residence.	Sub- scriptions.
		£ s. d.
* Coventry, The Earl of . . .	Croome Court, Severn Stoke, Worcestershire	2 2 0
Cowles, W. J.	Barnet, Herts.	1 0 0
Cox, B.	Pwlpen Farm, Christchurch, Newport, Mon.	0 10 0
Cox, C.	<i>Southampton Times</i> Office, Southampton	1 0 0
Cox, James	Rosewell Farm, High Littleton, Bristol	1 0 0
Crawshay, W. T.	Caversham Park, Reading	1 0 0
Crick, Thomas	Great Ash, Winsford, Dulverton	0 10 0
Crowley, J., and Co.	Meadow Hall Works, Sheffield	1 0 0
Crutchley, P. E.	Limminghill Lodge, Ascot	1 0 0
Culverwell, E. T.	Durleigh Farm, Bridgwater	1 0 0
Cuming, A. P.	Moreton Hampstead, Devon	1 0 0
Cundall, H. M., F.S.A.	Richmond, Surrey	1 0 0
Custance, Mrs. M.	Woodlands, Southwater, Horsham	1 0 0
Cutcliffe, G.	Coombe House, Witheridge, N. Devon	1 1 0
Dairy Outfit Company (Ld.).	King's Cross, London	1 0 0
Dairy Supply Company (Ld.)	Museum St., Bloomsbury, London	1 0 0
Damerel and Son.	161, Sidwell St., Exeter	1 0 0
Dames, C. R.	Bath and County Club, Bath	1 0 0
Dampney, G. D.	Hinton, Ilchester.	1 0 0
Danger, Thomas	Rowford Lodge, Taunton	1 0 0
Daniel, Rev. H. A.	Manor House, Stockland, Bridg- water	1 0 0
† Daniel, H. T.	Manor House, Stockland, Bridg- water	1 1 0
Daniel, Thos. C.	Stoodleigh, Tiverton	1 0 0
Darby, A. E. W.	Little Ness, Shrewsbury	1 0 0
Darby, E.	Liscombe, Dulverton	1 0 0
Darby, S. R.	Merafield, Martock, R.S.O.	1 0 0
† Davenport, Rev. George	Foxley, Hereford . . . . .	..
† Davey, J. Sydney	Brockym House, Helston, Cornwall . . . . .	..
Davey, Sleep, and Co.	Excelsior Plough Works, Ply- mouth	1 0 0
Davey, T.	Beere Manor, Cannington, Bridg- water	1 0 0
Davies, J. N.	Gweleath, Cury, R.S.O., Cornwall	1 0 0
Davis, Arthur J.	Farncombe Farm, Doultling, Shepton Mallet	1 0 0

Name.	Residence.	Subscriptions.		
		£	s.	d.
C.	Frogmore, Moreton-in-Marsh	1	0	0
J.	Tivoli, Newport, Mon.	1	0	0
J.	Doulting, near Shepton Mallet	1	0	0
V.	Tracy Park, Bristol . . . . .	..	
H.	Chelwood House, Pensford, near Bristol	1	0	0
.	Larkbere Farm, Ottery St. Mary, Devon	1	0	0
R. M.	Spurbarne, Exeter	1	0	0
Hon. R.	Holne Park, Ashburton.	1	0	0
W. and F.	Market Place, Bath.	1	1	0
Sons	Crewe	1	0	0
n.	Huxham, E. Pennard, Shepton Mallet	1	0	0
n, and Hewitt	22, Dorset St., Baker St., London . . . . .	..	
W. A.	20, Birchin Lane, London, E.C.. . . . .	..	
.	Newport, Mon.	1	0	0
iere, Lord	Woodborough House, Bath	1	0	0
e, Lord Willoughby	Compton Verney, Warwick . . . . .	..	
, Col.	Brook Lodge, Holm Wood, Dorking, Surrey	1	0	0
Rev. A. F.	Meshaw Rectory, S. Molton	1	0	0
rieta, A.	Wadhurst Park, Hawkhurst, Sussex . . . . .	..	
.	Bishop's Sutton, Bristol	1	1	0
ev. Samuel	Lattiford House, Wincanton	1	0	0
.	Chard, Somerset	1	0	0
The Earl of	Knowsley, Prescott . . . . .	..	
e, H. Denis	Charlton House, Wantage . . . . .	..	
ire, Duke of, K.G.	Chataworth, Derbyshire	5	0	0
, A.	Kingweston, Somerton, Somerset.	1	0	0
, W.	121, St. George's Square, Pimlico, London, S.W.	1	1	0
, Limited	Chester	1	1	0
ord	Minterne, Cerne Abbas . . . . .	..	
K.	Sherborne Castle, Sherborne	1	0	0
K. W., M.P.	Sherborne Castle, Sherborne	1	0	0
D., jun.	Manor Farm, Bathford, Bath.	1	0	0
n, R. M.	Horsington House, Templecombe	1	1	0
F. J.	Catherington, Horndean, Hants	1	1	0
ell, A. C.	Ripple Hall, Tewkesbury	1	0	0
C.	Elm Grove, Dawlish	1	0	0
ames	Cutsey, Trull, Wellington.	1	0	0
t. F. Milton	Bladon House, Woodstock. . . . .	..	
arl of	Tortworth Court, Falfield, R.S.O., Glos.	2	0	0
n, T.	2, Clarence Villas, Ryeland Street, Hereford. . . . .	..	
rth, Rev. W. A.	Orchardleigh Park, Frome.	2	0	0
Major A. G.	Stock House, Sturminster Newton	1	0	0
ie, Lord	Greendale, Clyst St. Mary, Exeter . . . . .	..	
an, Viscount	40, Charles Street, London, W. . . . .	..	

Name.	Residence.	Subscriptions.
Dunn, William	Frome	£ s. d. 1 0 0
†Durrant, Edward	Tunbridge Wells (Hon. Local Sec. 1881)	1 0 0
Dyer, J.	Corn Merchant, Swansea	1 0 0
Dyke, Thomas	Long Ashton Lodge, Clifton, near Bristol	1 0 0
*Dyke, Rt. Hon. Sir W. Hart, Bart., M.P.	Lullingstone Castle, Eynsford.	2 2 0
†Dymond, Edward E.	Oaklands, Aspley Green, Bletchley	1 0 0
Dymond, Francis W.	Exeter	1 0 0
Eagle Range and Foundry Co. (Limited)	Catherine Street, Aston, Birmingham	1 0 0
Easton and Bessemer (Ld.)	Taunton.	1 0 0
Easton, Richard	Heale Mount, Taunton.	1 0 0
Eddy, J.	Kenuford Ironworks, Exeter	1 0 0
Edgar, Frank	Polden Hill Dairy, Chilton Polden, Bridgwater	1 0 0
†Edgcumbe, Sir E. Robt. P.	Somerleigh Court, Dorchester	1 0 0
Edgington, Benjamin (Limited)	2, Duke Street, London Bridge, S.E.	1 0 0
†Edmondson, A.	Tubney Warren Farm, Abingdon	1 0 0
Edwards, C. L. Fry	The Court, Axbridge, Somerset	1 0 0
Edwards, A. P.	Hutton, Weston-super-Mare	1 0 0
Edwards, Jas.	Belmont, Flax Bourton, near Bristol	1 0 0
Edwards, Jas.	Brynhyfryd, Bwlch, Breconshire	1 0 0
Edwards, W. H. G.	Butcombe Court, Wrington	1 0 0
†Egmont, Earl of	Cowdray Park, Midhurst, Sussex	1 0 0
Eldridge, Pope, and Co.	Dorchester	2 0 0
*Ellesmere, Earl of	Worsley Hall, Manchester.	2 2 0
*Elliot, H. E. Tracey	Leigham House, Plympton	2 2 0
Ellis, E.	Summersbury Hall, Shalford, near Guildford	1 0 0
Ellis, J.	Maidstone	1 0 0
*Elton, Sir E., Bart.	Firwood, Clevedon	2 2 0
Elworthy, C.	Stone Farm, South Molton	0 10 0
Enys, F. G.	Enys, Penryn, Cornwall	1 0 0
Ernst, Major Henry	Wescombe House, Evercreech, Bath	1 0 0
Esdaille, C. E. T.	Cothelstone House, Taunton	1 0 0
Evans, Daniel	Winsford, Dulverton	0 10 0

Subscriptions.

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Name.	Residence.	Subscriptions.
David	Llanfennech Park, Llanelly	£ s. d. 1 0 0
Sir David, K.C.M.G.	Ewell Grove, Surrey	
H. J.	Greenhill, Whitchurch, Cardiff	1 0 0
W. H.	Ford Abbey, Chard	1 0 0
Thomas, Commander A.	Cae Rwnon, Builth	
M.	Woodram Farm, Pitminster, Taunton	1 0 0
er, S. W.	Little Bedwin, Wilts	
ing, Herbert	Thurloxton, Taunton	1 0 0
l, Capt. W.	The Priory, Burnham, Bucks.	1 0 0
ell, F. Geo.	Laura Place, Bath	
s, J. H.	Kingston Park, Dorchester	1 0 0
I.	Ludlow Estate Offices, Downton Castle, Bromfield, Salop.	1 0 0
G.	Milton Manor, Pewsey, Wilts	1 0 0
R. P.	Little Barwick, Yeovil	1 0 0
apt. W.	Langton Hall, Northallerton, Yorks.	1 1 0
	Elham, Canterbury	1 0 0
F.	St. Martins House, Wareham.	1 0 0
Alexander	Little Brickhill, Bletchley, Bucks	1 0 0
i. W.	Westwood Court, Faversham.	1 0 0
George J.	Churston Court, near Brizham, Devon	1 0 0
J. T.	Denant, Haverfordwest	1 0 0
er, C. E.	Kenward, Yalding, Maidstone	1 0 0
er, Lionel J. W.	Ewell Manor, West Farleigh, Maidstone	
er, W. J.	The Chantry, Wimborne	1 0 0
James	Chilmark, Salisbury	1 0 0
R. F.	The Hill, Stratford-on-Avon	1 0 0
Rev. Canon.	Worth Vicarage, Dover	1 1 0
W. R.	West Stafford, Dorchester	1 1 0
s and Bate (Limited)	Gorton, Manchester	1 0 0
A.	Wraxall Court, Nailsea, near Bristol	1 0 0
ster, Capt. F. W.	Smeaton Manor, Northallerton	
J. C.	Clatford Mills, Andover	1 0 0
Stuart	Postlip Hall, Winchcombe, Glos.	1 1 0
W. S.	Gore Court, Maidstone	1 0 0
scue, Earl	Castle Hill, South Molton	2 0 0
Harter, G. L.	Puckrup Hall, Tewkesbury	1 0 0
R. L.	Wells, Somerset	1 1 0
Bros.	The Oil Mills, Gloucester	1 1 0
W.	Ripple Vale, Deal, Kent	1 1 0

Name.	Residence.	Sub- scriptions.
		£ s. d.
Fowler and De la Perrelle	Gloucester Square, Southampton	1 1 0
†Fowler, G.	Claremont, Taunton	1 0 0
Fowler, J., and Co. (Limited)	Leeds	1 0 0
Fowler, Richard	Broughton, Aylesbury	1 0 0
Fowler, W. H.	Taunton.	1 0 0
Fox Brothers and Co.	Wellington, Somerset	1 0 0
Fox, C. L.	Shute Lodge, Wellington. Somers- set.	1 0 0
Fox, Dr. A. E. W.	16, Gay Street, Bath	1 1 0
†Fox, Robert	Falmouth	1 0 0
Foxcroft, E. T. D.	Hinton Charterhouse, Bath	1 1 0
Francis, William	Winstout, Crediton	0 10 0
†Franklen, Col. C. R.	Clemenstone, Bridgend	1 0 0
Franklin, J. N.	Bussell's Farm, Huxham, Exeter	1 0 0
Freeman, H. W., M.D..	24, Circus, Bath	1 1 0
Fricker, J. A.	Burton, Mere, Wilts.	1 0 0
Froom, Robert	Yondercott Farm, Uffculme, Devon	1 0 0
Frost, Adam E.	Ottery Villa, Pentonville, New- port, Mon.	1 0 0
Fry, C. E. Bruce	Mollington, Banbury	1 0 0
Fry, H. A.	19, Monmouth Place, Bath	1 0 0
Fry, W.	Curry Rivell, Taunton	1 0 0
†Fryer, William Rolles	Verwood Manor, Salisbury	1 1 0
Fuller, E. R.	The Hill, Batheaston, Bath	1 1 0
†Fuller, G. Pargiter.	Neston Park, Corsham	2 0 0
*Fuller, J. M.	Neston Park, Corsham	1 0 0
Fuller, S. and A.	Bath	1 0 0
Fursdon, Charles	Fursdon, Tiverton, Devon	1 0 0
Fursdon, E. S.	Posbury House, Crediton	1 1 0
†Galloway, W. G.	Cridland Farm, Spaxton, Bridg- water	1 1 0
Gardiner, Sons, and Co.	Nelson Street, Bristol	1 0 0
Gardner, W.	Chippenham	1 1 0
Gardner, W. E.	Bedminster, Bristol	2 2 0
*Garratt, Lt.-Col. T. A. T.	Bishop's Court, Exeter	0 10 0
Garth, T. C.	Haines Hill, Twyford	1 1 0
Garton, J. W.	Langhorne, Shepton Mallet	1 1 0
Garton, W.	Roselands, Woolston, Southamp- ton	1 1 0
Gear, W. H.	Union Street, Bath	1 1 0
Gee, B. G. H.	Lock's Mill House, near Bristol	1 0 0

Name.	Residence.	Sub- scriptions.
F. B.	Swan Hotel, Wells, Somerset. . .	£ s. d. 1 0 0
e, William E. . . .	Howe Croft, Stoke Bishop, Bristol	. . .
J.	Chipping Sodbury	1 0 0
s, B. G.	Tunley Farm, Bath . . . . .	. . .
, George.	Tunley, near Bath	1 0 0
, Antony.	Tyntesfield, Bristol . . . . .	. . .
I. J.	Milford, Salisbury	1 0 0
H. M.	Barrow Court, Flax Bourton, R.S.O., Somerset . . . . .	. . .
Denston.	Metchley, Barlow's Road, Edgbas- ton, Birmingham	1 1 0
J. T.	Havvet Lodge, Langford, R.S.O., Somerset	1 0 0
Sir W., Bart. . . .	Cambridge House, Regent's Park, London	1 1 0
t, D. A., B.Sc. . . .	University Extension College, Reading	1 0 0
Gilling, Capt. T. . .	Manor House, Bathford, near Bath	1 0 0
one, J.	Bowden Park, Chippenham . . . .	. . .
W., & Sons (Limited).	Warwick	1 0 0
Sir Richard G., Bart.	Gaunt's House, Wimborne. . . .	2 2 0
W. A.	Seagrove, Sea View, Isle of Wight	1 0 0
, A. L.	The Lawn, Swindon	1 0 0
, H.	Bossington, Allerford, Taunton . .	1 0 0
n, C. B.	Woldringfold, Horsham. . . . .	. . .
, J.	Park Hatch, Godalming	1 1 0
, F. B.	Langley Burrell, Chippenham . . .	1 1 0
y, G. Prior	Derriads, Chippenham . . . . .	. . .
, Sir G., Bart. . . .	Beechfield, Corsham	1 0 0
, J. R. P.	Compton House, Sherborne	1 0 0
d, A. J.	Chilton Cantelo, Ilchester	1 0 0
d, Rev. M. C. . . .	Chilton Cantelo Rectory, Yeovil. .	1 0 0
n, A.	3, Hammet Street, Taunton	1 0 0
Pannure	Hatton Court, Threadneedle St., London	1 0 0
ngton, W. F.	2, Princes Gate, London, W. . . .	1 0 0
C.	Wiston Park, Steyning	1 0 0
, Rev. John	Wiston Park, Steyning	2 2 0
ge, Hugh	Kingston-by-Sea, Brighton . . . .	. . .
, Right Hon. G. J.,	. . . . .	. . .
.	69, Portland Place, London, W. . .	1 0 0
. E.	Bursar of King's College, Cam- bridge	1 0 0
W. J.	Bassaleg, Newport, Mon.	1 0 0
Mrs.	28, Broadwater Down, Tunbridge Wells.	2 2 0
ne, S. W.	Backwell Hill House, Backwell, Bristol	1 0 0
H. L.	Abergwynant Hall, Dolgelly, N. Wales . . . . .	. . .

Name.	Residence.	Sub- scriptions.
Green, R.	The Whittern, Kington, Here- fordshire	£ s. d. 1 0 0
†Greenall, Sir G., Bart.	Walton Hall, Warrington . . . . .	..
Greenaway, J.	Ebbw Place, Ebbw Bridge, near Newport, Mon.	1 0 0
Greenfield, W. B.	Haynes Park, Bedford	1 1 0
Greenham, W. N.	Overton, West Monkton, Taunton	1 1 0
Greenslade, W. R. J.	Pell House, Trull, Taunton	1 0 0
Gregory and Wrenn	Taunton.	1 0 0
Gregory, Walter	Wellington, Somerset	1 0 0
Griffin, B.	New House, Broad Clyst, Exeter	1 0 0
Griffith, Col. J. T.	Fairfield House, Cheltenham	1 0 0
Griffiths, Bros.	West Place Hall, Coity, Bridgend	1 0 0
Grimstone, Commander Hon. W., R.N.	Sopwell, St. Albans	1 1 0
Grove, Sir T. Fraser, Bart.	Fern House, Salisbury	1 0 0
*Guest, Merthyr	Inwood, Henstridge, Blandford . . . . .	..
Guille, H. G. de C. Stevens	Little Torrington, Devon	1 0 0
Guise, Sir W. F., Bart.	Elmone Court, Gloucester	1 0 0
Gulley, H. J.	Rolber House, Wincanton	1 0 0
Guyon, Rev. H. C.	The Rectory, Lamyat, Bath	1 0 0
†Hall, J. F.	Sharcombe, Wells, Somerset . . . . .	..
Hall, T. Farmer	2, Observatory Gardens, Kensing- ton, London	1 0 0
Halsey, E. J.	104, Drayton Gardens, London, S.W.	1 0 0
Ham, J., jun.	Broadclyst, Exeter	0 10 0
Ham, William	Worridge, Collumpton	0 10 0
†Hambro, Everard A.	Hayes Place, Beckenham, Kent . . . . .	..
Hamilton, Hon. Mrs. A. B.	Sheldons, Hook, Hants	1 0 0
Hammett, F. T.	Hollins House, Chepstow Road, Newport, Mon.	1 0 0
Hancock, C.	The Grey House, Pucklechurh, Bristol	1 1 0
Hancock, Rev. F.	Selworthy, Somerset	1 0 0
Hancock, G. D.	Elm Hill, Grimley, Worcester	1 0 0
Hancock, H. C.	Halse, Taunton	1 0 0
*Handley, Rev. E.	Bath	2 0 0
Hankey, Col. W. A.	Beaulieu, St. Leonards-on-Sea	1 1 0
Hansard, H. W. and J.	Swansen	1 1 0
Harbord, Rev. H.	East Hoathley Rectory, Hawk- hurst, Sussex	1 0 0
Harbottle, E.	Topsam	1 0 0
Harding, T. K.	Ashton Gifford House, Codford, Bath	1 0 0
Harding, Webber	Highercombe, Dulverton	1 0 0

Name.	Residence.	Subscriptions.
		£ s. d.
e, Viscount	South Park, Penshurst	1 1 0
W. H.	Old Bank, Bristol	1 0 0
J., and Son.	Ebley, Stroud	1 0 0
A.	Brownell Farm, Stourton Caundle, Blandford, Dorset	1 0 0
1, G.	Underpark, Lealholm, Grosmont, Yorks	1 0 0
1, Major-Gen.	West Hay, Wrington, R.S.O., Somerset	1 0 0
1, McGregor, and Co.	Leigh, Lancashire.	1 0 0
C. D.	Manor House, Morebath, Devon	1 0 0
, W. M.	Allington Manor Farm, Bishop- stoke	1 0 0
1, T.	Williton, Taunton	1 0 0
us, J. Heywood	Bignor Park, Petworth . . . . .	..
is, Rev. J. B. H.	Rectory, Chelwood, Bristol.	1 0 0
n, Lieut.-Col. W. H.	Malmesbury, Wilts . . . . .	..
F. J.	West Pennard, Glastonbury	1 0 0
, Rt. Hon. Sir A., Bart.	Travina, Tintagel, Cornwall	1 0 0
-Hames, C. G.	Chagford, Newton Abbott	1 0 0
J.	Dorchester, Dorset	1 0 0
H.	Shepton Mallet	1 0 0
coat-Amory, Sir J. H., t.	Tiverton, Devon	2 2 0
coat-Amory, I. M.	Hensleigh, Tiverton, Devon	1 0 0
, E. H.	Mitcham, Pontardawe	1 1 0
Major G.	Poundisford, Taunton	1 0 0
lerson, W.	Berkley House, Frome . . . . .	..
Lt.-Col. F.	Elmstree, Tetbury	1 0 0
1, F. R.	Morebath, North Devon	1 0 0
F. W.	Yeomans, Wrington, East Somers- et	1 0 0
bury, Lord	Haytesbury, Wilts	1 0 0
J. F.	Freemantle, Southampton	1 0 0
B. H.	Belluton House, Pensford, Bristol . . . . .	..
Charles	Clevedon Hall, Somerset . . . . .	..
Col. E. S., C.B.	Rookwood, Llandaff . . . . .	..
iamond	Stratton House, Evercreech, Bath	1 0 0
idney	Langford House, Langford, R.S.O.	1 1 0
V.	Kilkenny, Shepton Mallet, Somers- et	1 0 0
n, J.	3, Gracechurch St., London, E.C.	1 0 0
ley, Edwin	Wells, Somerset	1 0 0
sley, J. H.	Ston Easton, Old Down, Bath . . . . .	..
ley, R. J. B.	Ston Easton Park, Bath	1 0 0
k, E.	Ashley Farm, Marnhull, Dorset	1 0 0
, C.	37, Fleet Street, London	2 0 0
1, Sir H. H. A., Bart.	Stourhead, Bruton . . . . .	..
, W.	Staplehurst	2 0 0
ouse, H., M.P.	Hadspen House, Castle Cary	2 0 0
ort, S.	Worminster Farm, Shepton Mal- let	1 0 0

Name.	Residence.	Subscriptions.
		£ s. d.
*†Hodgson, J. Stewart . . .	Lythe Hill, Haslemere, Surrey .	..
Holland and Coombs . . .	Bristol . . .	1 0 0
Hollond, J. R.	Wonham, Bampton, Devon . .	1 0 0
Holt, W. D.	Manor Farm, Castle Cary, Somerset . . .	1 0 0
Holt Needham, O. N. . . .	Castle Cary, Somerset . . .	1 0 0
Hood, Sir A. Acland, Bart., M.P.	St. Audries, Bridgwater . . .	1 1 0
†Hooper, R. N.	Stanshawes Court, Chipping Sodbury . . .	..
Hopper, H. R.	48, Catford Hill, London, S.E. .	1 1 0
†Horner, J. F. Fortescue . .	Mells Park, Frome . . . . .	..
Hornsby and Sons (Limited)	Grantham, Lincoln	1 0 0
Horton, J.	Rabson Farm, Winterbourne Bassett, Swindon . . .	1 0 0
Horton, Rev. Le G.	Wellow Vicarage, Bath. . . .	1 1 0
Horwood, R. E.	Drayton Beauchamp, Tring, Herts	1 0 0
Hosegood, Obed., jun. . . .	Dillington, Ilminster	0 10 0
Hosken, W. J.	Pulsack, Hayle, Cornwall . . .	1 0 0
Hoskins, Robert.	Beard Hill, Shepton Mallet . .	1 0 0
How, J. H.	Bideford	1 0 0
Howard, E. S.	Thornbury Castle, Glos. . . .	1 0 0
Howard, J. H.	Goldenhayes, Bartley, Totton, Hants	1 0 0
Howard, J. and F.	Britannia Works, Bedford. . .	1 0 0
Howse, H. J.	London, Gloucester, and N. Hants Dairy Co., Bristol	1 0 0
Hubbard, W. E.	Leonards Lee, Horsham	1 0 0
†Hughes, A. E.	Wintercott, Leominster . . . .	..
Hulbert, T. R.	North Cerney, Cirencester . . .	1 0 0
†Hulse, Sir Edward, Bart.	Breamore, Salisbury . . . . .	..
*Hulse, E. H., M.P.	Breamore, Salisbury	2 0 0
Hunter, J.	Seed Merchant, Chester	1 0 0
†Hurl, J. Cooke	Southfield House, Brislington, Bristol . . . . .	..
Hurst and Son	152, Houndsditch, London . . .	1 0 0
Hussey, F. T.	The Grove, Cheddon Fitzpaine, Taunton	1 0 0
Hussey, John Richards . . .	Beechcroft, St. Davids, Exeter .	0 10 0
Huth, L.	Possingworth Manor, Waldron, Sussex	1 0 0
*Hylton, Lord	Charlton, near Radstock	2 2 0

Name.	Residence.	Sub- scriptions.
		£ s. d.
R.	The Hawthorns, Knowle, Warwickshire	1 0 0
r, Earl of	Melbury, Dorchester	1 0 0
rry, H. M.	Strate Raleigh, Whimble	1 0 0
neut.-Col. R. B.	Steyning, Sussex	1 1 0
.	Merton, Surrey	1 0 0
s.	Clifton Park, Bristol	1 0 0
. C. C.	Brislington Hall, near Bristol	1 1 0
Sir H. M., Bart.	Llantillio Court, Abergavenny	1 0 0
V.	Manor House, Dawlish, Devon	1 0 0
J.	Lansdowne, Guildford	1 0 0
B.	Shovell Hill House, N. Petherton, Bridgwater	1 0 0
L. J.	Snowdon Villa, Chard	1 0 0
W.	Liskeard, Cornwall	0 10 0
Sir J. J.	The Grange, Swansea	1 0 0
.	Pantyscallog, Dowlais	1 0 0
V. H. P.	Baglan House, Briton Ferry, S. Wales.	1 0 0
Earl of	Middleton Park, Bicester, Oxon	2 0 0
nitary Compounds		
y	Cannon Street, London, E.C.	1 0 0
.	The Firs, Shootup Hill, Brondesbury, N.W.	1 0 0
.	Cowbridge, Glamorgan	1 0 0
Ion. G., M.P.	Amerdown Park, Radstock . . . . .	..
. N.	Crishall Grange, Saffron-Walden . . . . .	..
George	Ickleton, Saffron-Walden . . . . .	..
Henry Parr	Beaufort House, Winchester . . . . .	..
John F. J.	Chippenham	1 0 0
r.	Chewton Farm, Ston Easton, Bath	1 0 0
mes B., and Co.	Journal Office, Bath	1 0 0
.	Blagdon Stud Farm, Malden, Surrey	1 0 0
V.	Shaw Farm, Melksham	1 0 0
Jo.	Gloucester	1 0 0
.	Salisbury Green, Southampton	1 1 0
A.	Timsbury, Bath	1 0 0
J.	Maer Farm, Exmouth . . . . .	..
nte, St. David M.	Goathurst, Bridgwater	1 0 0
, Sir J. H., Bart.,		
.	Escot, Ottery St. Mary.	1 1 0
D.	The Forbury, Reading	1 0 0

Name.	Residence.	Sub- scriptions.
		£ s. d.
†Kettlewell, W. W.	East Harptree Court, Bristol . . .	..
*Keyser, C. E.	Aldermaston Court, Reading . . .	2 0 0
Keyworth, J. & H., and Co. . .	35, Tarleton Street, Liverpool . .	1 0 0
Kidner, Edwin	Cothelstone Manor, Taunton . . .	1 0 0
Kidner, John	Nynehead, near Wellington, Som. .	1 0 0
Kidner, S.	Bickley Farm, Milverton, Somerset	1 0 0
Kidner, W.	Fennington, Kingston, Taunton . .	1 0 0
Kindersley, E. L.	Clyffe, Dorchester	1 0 0
King, G. F.	Chewton Keynsham, Bristol . . .	1 0 0
King, J. M.	3, Powis Road, Brighton	1 0 0
King, J. P.	North Stoke, Wallingford	1 0 0
King, R. Moss	Ashcott Park, Bridgewater	1 0 0
King and Son, R.	Milsom Street, Bath	1 1 0
King, Sir D. Duckworth, Bart. .	Wear House, Exeter	1 0 0
King, Sir Wm. D.	Stratford Lodge, Southsea	0 10 0
Kingscote, T.	The Trench, Tonbridge	1 0 0
Kinneir, H.	Redville, Swindon	1 0 0
Kirkham, W.	Bangley Farm, Tamworth	1 0 0
Knatchbull, W.	Trefusis, Fushing, Cornwall . . .	1 1 0
†Knight, Sir F. W., K.C.B. . .	Simonsbath, South Molton . . . .	..
Knight, R.	Troytes Farm, Tivington, Mine- head	1 0 0
Knight, S. J.	Dundry, Somerset	1 0 0
†Knollys, C. R.	Grange Cottage, Alresford, Hants	..
†Kruise, W.	Leeds, near Maidstone . . . . .	..
†Lake, C.	Oakley, Higham, Kent . . . . .	..
Lakeman, Thos.	Brixham, Devon	0 10 0
Lambert, G., M.P.	Spryton, North Devon	1 1 0
Lamoreaux, G.	6, Bovingdon Villas, Plympton . .	1 1 0
Lamport, Messrs. C.	Bindon House, Wellington, Som. .	1 0 0
Lance, C. E.	Stoke Court, Taunton	1 0 0
Lane, A. P.	Plas Power, Wrexham	1 1 0
Lang, W. and J.	Hambridge, Somerset	1 0 0
Langley, B. W.	King's Lynn, Norfolk	1 0 0
Langworthy, W. F.	Clevedon, Somerset	1 0 0
*Lansdowne, Marquis of . . .	Bowood, Calne	2 0 0
Lascelles, Rev. E.	Newton St. Loe, Bristol	1 0 0
†Latham, T.	Dorchester, Oxon . . . . .	..
Laurie, A. P.	49, Beaumont Square, London, E. .	1 0 0
Laver, J. G.	Northover, Glastonbury	1 0 0
*Laverton, W. H.	Leighton House, Westbury, Wilts	2 0 0
Lawrence, J. H. H.	1, Lynwid Villas, Bath	1 1 0
*Lawson, H. G., M.P.	Taplow, Bucks	2 0 0
*Leconfield, Lord	Petworth, Sussex	2 0 0
Lee, Major-Gen. H. H. . . .	The Mount, Dinas Powis, near Cardiff	1 0 0
Leech, T.	Beaufort Arms Hotel, Raglan . . .	0 10 0
Lees, Elliott, M.P.	South Lychett Manor, Poole, Dorset	1 1 0

Name.	Residence.	Subscriptions.
		£ s. d.
Gapper	Melplash Court, Melplash, Dorset	1 0 0
L.	Court Lodge, West Farleigh, Kent	1 0 0
l, Sir J. Farnaby,	Wickham Court, West Wickham, Kent	3 0 0
ze, Charles.	Sherfield Manor, Basingstoke	1 0 0
lge, J. C. Baron	Tregeare, Launceston	2 0 0
lge, W.	Courtlands, Lymptone	2 0 0
, W.	Woolleigh Barton, Beaford, North Devon	0 10 0
ames	Plasdraw, Aberdare	1 1 0
m., and Son	Herald Office, Bath	1 0 0
hn Henry	Trehill, Exeter . . . . .	. . .
, C. J.	Haggerston Castle, Beal, North- umberland . . . . .	. . .
E., M.D.	Silver Street House, Taunton	1 0 0
st, R. C. C.	Over Court, near Bristol	1 0 0
, G.	Frogholt, Hythe, Kent	1 0 0
e, Earl of	Crosswood, Aberystwith, S. Wales . . . . .	. . .
. J.	Warninglid Grange, Haywards Heath . . . . .	. . .
A., and Co.	Dursley, Gloucestershire	1 1 0
tock, Baron	The Hendre, Monmouth . . . . .	. . .
, Evan H., M.P.	Langford Court, Langford, Bristol	1 1 0
, W. J.	Southwood, Tiverton	1 0 0
n, Sir J. T. D., Bart.,	Penllergare, Swansea	2 2 0
erbert	Plas Cilybebyll, Swansea	1 1 0
J.	Saltford, near Bristol	1 0 0
. C. E.	Northmoor, Dulverton	1 0 0
rough, Earl of	Londesborough Park, Market Weighton	1 0 0
.	Ogbourne St. Andrew, Marl- borough	1 0 0
Rt. Hon. Walter H.,	Rood Ashton, Trowbridge . . . . .	. . .
. William	Woodlands, Congresbury, Somerset	1 0 0
Y. Buller	Maristow, Roborough, Plymouth.	1 0 0
ir M., Bart.	Maristow, Roborough, Devon	2 0 0
. Q.	Langport	1 0 0
Amos	Winsford, Dulverton	0 10 0
T.	Bossington, Allerford, Taunton	1 0 0
. C.	St. James' Dairy, Bath.	1 0 0
, Sir John, Bart., M.P.	High Elms, Hayes, Kent . . . . .	. . .
n, E. H.	Treasurer's House, Guy's Hospital, London	1 0 0
J. B.	Brockampton, Worcester . . . . .	. . .
Capt. A. F.	Court House, East Quantoxhead, Bridgwater	1 0 0
Rev. A. H. F.	Minehead, Bridgwater	1 0 0
E. F.	Dunster Castle, Somerset	1 0 0

Name.	Residence.	Sub- scriptions.
		£ s. d.
*MacAndrew, J. J.	Lukesland, Ivybridge	2 0 0
MacCalmont, H. L. B.	Bishopswood, Ross.	1 1 0
McMullen, A. E.	Vale House, Hertford	1 0 0
Major, H. J., and C. (Limited)	Bridgwater	1 0 0
Mallock, Richard, M.P.	Cockington, Torquay	1 0 0
Manfield, J.	Hambridge, Curry Rivell, Taun- ton	1 1 0
†Mansell, A. E.	Astol, Shifnal, Salop . . . . .	..
Maple, Sir J. B., M.P.	Childwickbury, St. Albans	1 0 0
Marcus, M.	High Trees, Redhill, Surrey	1 0 0
Marker, Richard.	Combe, near Honiton	1 0 0
Marshall, J. T.	Highridge Farm, Dundry, Somers- et.	0 10 0
Marshall, Sons, and Co.	Britannia Iron Works, Gainsboro'	1 1 0
Marten, G. N.	Marshals Wick, St. Albans	1 0 0
Martin, Christopher	Broad Clyst, Exeter	0 10 0
†Martin, G. E.	Ham Court, Upton-on-Severn . . . . .	..
Martin, J.	Thorverton, R.S.O., Devon	1 0 0
*Maskelyne, N. Story	Basset Down House, Swindon	2 2 0
Mason, A.	North Hill, Swansea	1 0 0
*Mason, J.	Eynsham Hall, Oxon	2 0 0
Massey, F. I.	54 & 55, Bunhill Row, London, E.C.	1 0 0
Mathews, Ernest	Chequers Mead, Potters Bar	1 0 0
Maule, M. St. John	Chapel House, Bath	1 0 0
May, A. C.	Park House, Cotham Park, Bristol	1 0 0
Maynard, W. T.	Yeovil	1 0 0
†Mayo, Henry	4, Temple Terrace, Dorchester . . . . .	..
†Mayo, John	Coker's Frome, Dorchester. . . . .	..
McMurtrie, J.	Southill, Radstock, near Bath	1 0 0
Meade, F.	Langport, Somerset	1 0 0
Medland, W. R.	Yard Farm, Silverton, Cullompton	0 10 0
Medlicott, Henry E.	Potterne, Devizes	1 0 0
Merry, Richard	Goulds, Broad Clyst, Exeter	0 10 0
Merry, W. F.	Ash Clyst, Broad Clyst, Exeter	1 0 0
Merryweather, J. C.	Hollies, Blackheath	1 0 0
Methuen, Major-Genl. Lord, C.B., C.M.G.	Corsham Court, Wilts	1 0 0
Mickleth, H.	Wiltshire Farm, Wokingham	1 0 0
Middleton, Hastings N.	Bradford Peverell, Dorchester.	1 0 0
Mildmay, Rev. A. St. J.	Hazlegrove, Sparkford, Bath	1 1 0
Mildmay, Capt. C. B. St. J.	Hallam, Dulverton	1 0 0
*†Mildmay, Sir H. St. John, Bart.	Dogmersfield Park, Hartford Bridge, Winchfield . . . . .	..
†Mildred, G. B.	Butleigh, Glastonbury . . . . .	..
Miles, A.	Winchcombe Street, Chelten- ham	1 0 0
†Miles, H. R.	Abbots Leigh, Clifton, Bristol . . . . .	..
Millard, H.	Shrivenham, Berks	1 0 0
Mills, P. L.	Ruddington Hall, Nottingham	1 0 0
Minton, T. S.	Montford, Shropshire, R.S.O.	1 0 0

Name.	Residence.	Subscriptions.		
		£	s.	d.
se, H.	St. George's Hill, Easton-in-Gordano	1	0	0
ll, F. J.	Llanfreckfa Grange, Caerleon, Mon.			
J. J.	5, Buckingham Gate, London, S.W.	1	0	0
retton, Lord.	8, Seamore Place, London.	1	1	0
gu, Lord.	Palace House, Beaulieu, Hants	2	0	0
ore, Sir F., Bart.	Worth Park, Crawley	1	1	0
C.	Weston House, Evercreech	1	0	0
H. F.	41, Offley Road, Brixton Road, S.W.			
Stevens, J. C.	Winscott, Gt. Torrington, Devon	3	0	0
n, Lord	Sarsden House, Chipping Norton	2	2	0
, H.	Woolcombe, Wellington, Somerset	1	0	0
-Richardson, C.	Noyadd Wilym, Cardigan	1	0	0
l, Charles W.	Elmscroft, West Farleigh, Maidstone	1	1	0
, Earl of	Saltram, Plympton, Devon	2	0	0
l, G. Herbert	Headington Hill Hall, Oxford	2	2	0
and Griffin (Limited)	Maindee, Newport, Mon.	1	1	0
Son & Pearl	Auctioneers, North Curry, Taunton	1	0	0
Sir R. A.	Sketty Park, Swansea	1	0	0
W.	4, Norton Road, Hove, Brighton.	1	0	0
on, Alfred	Fonthill House, Tisbury			
, G. W.	Wasing Place, Reading			
-Edgcumbe, Earl of	Mount-Edgcumbe, Devonport	2	2	0
tevens, J.	Railway Hotel, Yatton	1	0	0
ow, E.	Castlehead Grange, Lancashire			
ow, E., jun.	Bury, Lancashire			
as, W. H.	Westfield Place, Battle, Sussex	2	2	0
, T.	Aberfeldy, The Shrubbery, Westonsuper-Mare	1	0	0
Capt. G.	Elmsleigh, Send, Woking.	1	0	0
P. A., M.P.	Dunsmore, near Rugby	1	0	0
, Col. Wyndham, M.P.	10, Rutland Gate, London, S.W.	1	0	0
-Anderdon, H. Edward	Henlade House, Taunton	1	1	0
Col. W. D.	50, Queen's Gate Terrace, London, S.W.	1	0	0
, H. B.	Chippenhams	1	1	0
, G.	Lee Farm, Wisboro' Green, Billingshurst, Sussex	1	1	0
, F.	Macknade, Faversham	1	1	0
Sir A. W., Bart.	Grittleton, Chippenhams	1	0	0
, C. W.	Carnarvon Arms, Dulverton, Somerset.	0	10	0
le-Grenville, Robert	Butleigh Court, Glastonbury			

Name.	Residence.	Sub- scriptions
Newton, F. M.	Barton Grange, Taunton	£ s. d. 1 0 0
†Newton, J. G.	*Millaton House, Bridestowe, Oke- hampton . . . . .	. . .
Nix, Mrs. S.	Tilgate, Crawley, Sussex	1 0 0
Nock, E.	Brockton House, Shifnal, Salop . .	1 0 0
*Normanton, Earl of	Somerley, Ringwood, Hants . . .	2 0 0
Norman, H. T.	Cushuish, Kingston, Taunton. . .	1 0 0
Norrish, Thomas	Churchill Farm, Loxbeare, Tiverton	0 10 0
Northcote, Hon. Sir S. H., Bart., M.P.	7, Seamore Place, Mayfair, London	1 0 0
*Northumberland, Duke of .	Albury Park, Surrey	5 0 0
..		
Okeden, Col. U. P.	Turnworth, Blandford	1 0 0
Oliver-Bellasis, Captain . . .	Shilton House, Coventry	1 0 0
*Onslow, Earl of, G.C.M.G. .	7, Richmond Terrace, Whitehall, London, S.W.	2 0 0
†Ormerod, Miss E. A.	Torrington House, St. Albans . .	. . .
..		
Paget, L. C.	Amerdown, Radstock	1 0 0
*Paget, Rt. Hon. Sir R. H., Bt.	Crannmore Hall, Shepton Mallet .	2 0 0
Pain, Charles	Grosvenor House, Stockbridge, Hants	1 1 0
Palairot, H. H.	Cattistock Lodge, Dorchester . . .	1 1 0
Palfreman, L.	Ingrams Farm, Loxbeare, Tiverton	0 10 0
Palmer, Geo.	Marlston House, Newbury, Berks .	1 0 0
Palmer, G. W.	Elmhurst, Reading	1 0 0
†Palmer, R.	Lodge Farm, Nazeing, Waltham Cross . . . . .	. . .
Parfitt, J.	Selwood Dairy, Frome	1 0 0
Parker, Admiral	Delamore House, Ivybridge	1 0 0
†Parker, Hon. Cecil J.	Eaton Estate Office, Eccleston, Chester . . . . .	. . .
Parker, H. C. G.	Brockton Grange, Shifnal, Salop. .	1 0 0
Parker, T.	High Street, Shepton Mallet . . .	1 0 0
Parkin, Paxton William . . .	3, Major Terrace, Seaton, Devon .	1 0 0
†Parmiter, Wm.	The Axe, Crewkerne . . . . .	. . .
Parrington, M. B.	Holborough Cottage, Rochester . .	1 0 0
Parry, T.	Newport, Mon.	1 0 0
†Parsons, H. J. D.	Bampfylde House, Exeter . . . .	. . .
†Parsons, J. D. Toogood . . .	Ashurst Place, Langton, Tun- bridge Wells . . . . .	. . .
Part, C. T.	Aldenharn Lodge, Radlett, St. Albans	1 0 0
Partridge, S. J.	Selworthy, Taunton	1 0 0
Partridge, Capt. W. St. Ives.	The Coppice, Bishopswood, Ross. .	1 0 0
Payne, Major J. H. Khyber .	Royal National Hospital, Ventnor .	1 0 0
Peacock, E.	14, Union Street, Bath	1 0 0
Pearson, E. & W.	African Chambers, Liverpool. . .	1 0 0

Subscriptions.

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Name.	Residence.	Subscriptions
		£ s. d.
Mr. J. W.	Shirley, Southampton	1 0 0
Mr. G. H.	Tangier Park, Basingstoke . . .	1 0 0
Mrs. W. Cole	Pendarves, Camborne, Cornwall .	1 1 0
Mr. Thomas	Taunton	1 0 0
Mr. T. S.	Musgrove Farm, Taunton	1 0 0
Mr. E. A.	Severn House, Henbury, Bristol .	1 1 0
Mr. P.	Somerset Court, Brent Knoll, Highbridge	1 1 0
Mrs. -Herrick.	Beau Manor Park, Loughborough .	. . .
Mr. J.	Mark House, Mark, Highbridge . .	1 0 0
Mr. Wm. Parsons	2, Park Villas, Ashley Road, Epsom . . . . .	. . .
Mr. R.	Acland Barton, Landkey, Barnstaple	0 10 0
Mr. J. McLeod	Gatacre Park, Bridgnorth	1 1 0
Mr. T. Valentine, C.V.S.L.	Crudwell, Malmesbury . . . . .	. . .
Mr. C. D.	Newport, Monmouth . . . . .	. . .
Mr. J. P.	Pencerley Farm, Beaulieu, South- ampton	1 0 0
Mr. Rev. H. J.	Walkern Rectory, Stevenage . . .	1 0 0
Capt.	Pendoggett, Timsbury, near Bath .	1 1 0
Mr. R. Sims, and Co., Lmtd. Messrs. Brothers and Co. . . .	Bedford Foundry, Leigh	1 0 0
Mr.	59, Bishopsgate Street Without, London	1 0 0
Mr. W.	High Pennard House, Bryn Road, Swausea	1 0 0
Mr. Erlysman C.	Berwick St. James, Salisbury . . .	. . .
Mr. F.	The Grange, Somerton, Somerset .	1 0 0
Mr. R. W.	Farnley House, Dursley, Glos. . .	. . .
Mr. W.	Somerton, Somerset . . . . .	. . .
Mr. Thomas, jun.	Southside Street, Plymouth . . .	. . .
Mr. Lord	Poltimore Park, Exeter.	3 3 0
Mr. Thos. R.	Polwhele, Truro	1 1 0
Mr. S.	Blandford, Dorset	1 0 0
Mr. T.	Minehead, Somerset	1 0 0
Mr. E.	9, 10 and 11, Queen Square, Bath .	1 0 0
Mr. A. R.	12, Chester Place, Hyde Park Square, London, W.	1 0 0
Mr. Bros.	Marksbury, near Bath	1 0 0
Mr. Alfred	Dorchester	1 0 0
Mr. John	The Shrubbery, Barnfield, Exeter .	1 0 0
Mr. R. J.	Bresford Manor, Plumpton, Lewes	1 0 0
Mr. Rev. W. J. P.	Godmanstone Rectory, Dorchester .	. . .
Mr. J. A.	Edgarley, Glastonbury	1 0 0
Mr. Melville	Laverstoke House, Micheldever . .	2 0 0
Mr. Wyndham	Malshanger, Basingstoke	1 0 0
Mr. R.	Denewood, Broadlands Road, Highgate, London, N. . . . .	. . .
Mr. Hon. C. B.	Child-Okeford, Blandford, Dorset .	. . .
Mr. Hon. E. W. B.	Hestercombe, Taunton . . . . .	. . .
Mr. Viscount	Bryanston, Blandford	5 0 0

Name.	Residence.	Sub- scriptions.
Potter, F. P.	Gate Works, King's Lynn	£ s. d. 1 0 0
Poulett, The Earl	Hinton St. George, Crewkerne . .	1 0 "
Powell, R. H.	Lewes, Sussex	1 0 0
Powell, W. P.	Hirwain, near Aberdare	1 0 0
*Poynder, Sir J. Dickson, Bart., M.P.	Hartham Park, Corsham	2 0 0
Pratt, J. D.	Pratts Hayes, Exmouth	1 0 0
Price, J. W.	Newport Pottery Co., Newport, Mon.	1 0 0
*Prior, R. C. A.	Halse House, near Taunton . . .	2 0 "
Pritchard, W.	Terrace House, Rhymney, Cardiff	1 0 0
Proctor and Ryland	Carr's Lane, Birmingham	1 0 0
Proctor, H. and T.	Cathay, Bristol	1 1 0
Pulley, Sir J.	Lower Eaton, near Hereford . .	1 0 0
†Purgold, A. D.	Park View Farm, Combermere, Whitchurch, Salop	1 0 0
Purrott, W.	Cunnynhame Hill, St. Albans . .	1 0 0
Pyatt, G. H.	Park Farm, Bath.	1 0 0
Radway, C. W.	Bath	1 1 0
*Ramsden, J. C.	Busbridge Hall, Godalming . . .	2 0 "
Ransome, James Edward . .	Orwell Works, Ipswich	1 1 0
Rashleigh, Jonathan	Menabilly, Par Station, Cornwall	1 0 0
Rawlence, Ernest A.	Newlands, Salisbury.	1 0 0
Read, B.	New Barn Farm, Keynsham . . .	1 0 "
Read, E.	Axbridge, Somerset	1 0 0
Rees, W. J.	Swansea	1 0 0
Reeves, Robert and John, and Son	Bratton Iron Works, Wentbury, Wilts	1 0 0
Reid, A.	Livingshayes, Silvertown	1 0 0
Reid, P. V. A.	Belcombe Brook, Bradford-on- Avon	1 0 0
Rendell, R. F.	Kingston House, Staverton, Totnes	1 0 0
Reynolds, W.	High Ham, Langport	0 10 6
Rich, F. W.	Royal Nurseries, Sandford, Bristol	1 0 0
Richards, T. B.	East Pennard, Somerset	1 0 0
Richards, W. F.	Beaumont, Broad Clyst, Exeter .	1 0 0
Richardson, F. E.	Glanbrydan Park, Carmarthen . .	1 0 0
Richardson, J. C.	Glanbrydan Park, Manordilo, R.S.O., Carmarthen	1 0 0
Rickeard, Silas	Newlyn East, Grampound Road, Cornwall	1 0 0
Ridler, James	Blackford, Selworthy, Minehead .	1 0 0
Ridler, T. K.	Minehead, Taunton	1 0 0
Rigby, T.	Sutton Weaver, <i>via</i> Warrington, Cheshire	1 0 0

Name.	Residence.	Subscriptions.		
		£	s.	d.
y	Lynninge, Hythe, Kent	1	0	0
Fox-Pitt	Rushmore Lodge, Salisbury . .	1	0	0
rd	Lanhydroc, Bodmin	2	0	0
nd H. (Limited)	Deanshanger Ironworks, Stony Stratford, Bucks	1	0	0
t. Cramer	Highfield, Frant, Tunbr. Wells .	1	1	0
nd Son	Bridgwater	1	1	0
.	High Bray, South Molton	0	10	0
.	Lynhales, Kington, Herefordshire	1	0	0
in, and Co. . . .	Bristol	1	1	0
uden, (Limited)	Wantage, Berks	1	0	0
Buckley	Llanelly	1	0	0
ark	Stevenstone, Torrington	1	1	0
es	West Town, R.S.O., near Bristol	1	0	0
ord	Tring Park, Herts	1	0	0
.	Banham, Attleborough, Norfolk .	1	0	0
.	Hall Place, Crauleigh, Guildford	1	0	0
sey Agricultural ultural Society .	Guernsey	1	0	0
.	Todenham, Moreton-in-Marsh . .	1	0	0
.	Sherborne	0	10	0
roctor	Sheaf Iron Works, Lincoln . . .	1	1	0
. A.	Highclere Castle, Newbury, Berks	1	0	0
.	North Cadbury, Bath	1	0	0
vard P.	Moxhull Park, Erdington . . . .	. . .	
.	Buchan Hill, Crawley, Sussex . .	1	0	0
H.	Beckington Rectory, Bath	1	0	0
ms, Earl of . . .	Port Elliot, St. Germans, R.S.O., Cornwall	3	3	0
nd P.	Maiden Bradley, Bath	1	0	0
.	North Fields, Bridgwater	1	0	0
.	Yonder Broadpool Farm, Dou- ting, Shepton Mallet	1	0	0
min	Newlands, Broad Clyst, Exeter . .	1	0	0
lt. Hon. Sir B.,	Banbury	1	0	0
rneast	Bodicote Grange, Banbury	1	1	0
d Co.	Britannia Works, Banbury	1	1	0
.	Stoke House, Exeter	1	0	0
J.	Stoke House, Exeter . . . . .	. . .	
L.	Rectory, Whimble, Devon	1	0	0
. A.	Nynehead, Wellington, Somerset	1	1	0
A.	Nynehead, Wellington, Somerset	1	0	0
M.	Boracott, Brandiscorner, N. Devon	1	0	0

Name.	Residence.	Sub- scriptions.
Saunders, G., jun.	Lydeard House, Taunton	£ s. d. 1 0 0
Savile, Col. H. B. O.	4, Rodney Place, Clifton	1 1 0
*Scobell, Col. Barton L. J. . . .	Kingwell Hall, High Littleton, near Bristol	2 2 0
Scott-Hall, H.	Dormington Court, Hereford . . .	1 0 0
Scott, R. W.	East Lambrook, S. Petherton . . .	1 0 0
†Scott, T.	Ditton Court, Maidstone . . . .	..
*Scrutton, D. R.	Ogwell, Newton Abbott	2 2 0
Search, Miss B.	Cowie, Stonehaven, N.B.	1 0 0
†Seaton, Lord	Nutwell Court, Lympstone, Devon . . . . .	..
Sellick, Jas.	Courtlands, Brompton Ralph, Wiveliscombe	0 10 6
Senior, H.	Rushton, Blandford, Dorset . . .	1 0 0
†Seymour, R. A. H.	46, Earl Street, Maidstone (Hon. Local Sec., 1884) . . . . .	..
Shackell, R.	Lower Swainswick House, Bath . .	1 0 0
Shakerley, Col. H. W.	Embley Park, Romsey, Hants . . .	1 0 0
†Shaw-Stewart, Walter R.	Berwick House, Hindon, Salis- bury . . . . .	..
Shears, W.	Lee Farm, Pyrford, Woking Station	1 0 0
Shelley, Sir John, Bart.	Shobrooke Park, Crediton	1 1 0
Sheppy, J.	Iwoods House, Congresbury, Bristol	1 0 0
†Sherston, Major C. D.	Evercreech, Somerset . . . . .	..
†Sherston, T. P. D.	Evercreech, Bath . . . . .	..
Shore, J. H.	Whatley House, Frome	1 0 0
Sillifant, A. O.	Coombe House, Copplestone, N. Devon	1 0 0
Silvester, F. W.	Hedges, St. Albans	1 0 0
Sims, G. T.	Land Agent, Neath	1 0 0
†Simmons, Henry	Bearwood Farm, Wokingham . . .	..
Simpson, F. C.	Maypool, Churston Ferrars, R.S.O., S. Devon	1 0 0
*†Singer, A. M.	Redworth, near Totnes . . . . .	..
*Singer, W. M. G.	Streatfield, Paignton, Devon . . .	5 0 0
Skinner, A. C.	Pound Farm, Bishop's Lydeard, Taunton	1 0 0
*Skrine, Henry Duncan	Claverton Manor, Bath	2 0 0
Skrine, Col. H. M.	Warleigh Manor, Bath	1 1 0
Slade, A. H.	Stock Exchange, London, E.C. . .	1 0 0
*Slater, A.	Gloucester Carriage Works, Glou- cester	2 2 0
Smart, G. E.	Combe Hay Manor, Bath	1 1 0
Smith, A. J.	Highgrove, Totterdown, Bristol . .	1 0 0
*Smith, Hon. W. F. D., M.P. . . .	Greenlands, Henley-on-Thames . .	5 0 0
Smith, Hugh C.	Mount Clare, Roehampton	1 0 0
†Smith, J. W.	Thinghill Court, Hereford . . . .	..
†Smith, S. Lee	Larkfield, Maidstone
Smith, W.	Sundon House, Clifton Down, Bristol	1 0 0

Subscriptions.

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Name.	Residence.	Sub- scriptions.
		£ s. d.
lla, E.	Settle, Yorkshire.	1 0 0
th, Sir J. H. Greville,	Ashton Court, Bristol	1 0 0
J.	Broad Clyst, Exeter.	2 0 0
set, Duke of	Maiden Bradley, Bath	1 1 0
et Trading Co.	Bridgwater	1 0 0
ville, A. F.	Dinder House, Wells, Somerset	1 0 0
man, Henry	6, Terrace Walk, Bath	1 0 0
man, Sir J., Bart.	The Hall, Wem, Salop	1 0 0
W. S.	Mill Farm, Prison , Bath	1 1 0
W., jun.	Jordans, Ilminster	1 0 0
r, J. M.	Oakhill, Bath	1 0 0
r, W. C.	North Perrott, Crewkerne	1 0 0
Capt.	Spye Park, Chippenham	1 0 0
C.	Manor Farm, Bishops Caundle, Sherborne	1 0 0
Joseph	High Street, Glastonbury	1 0 0
s' Patent (Limited).	Henry Street, Bermondsey, London	1 0 0
ay, Rev. Edward	Heathfield, Taunton	1 0 0
, P.	Bude Haven, near Cornwall	0 10 0
d, W.	Sunny Lodge, Malvern Link	1 0 0
sh, Miss L.	New Park, Brockenhurst, Hants	1 0 0
rd, A.	Eatons, Steyning, Sussex	1 0 0
ord, W.	Eatons, Steyning, Sussex	1 0 0
ope, Hon. and Rev. B. L. S.	Byford Rectory, Hereford	2 0 0
ey, E. J., M.P.	Quantock Lodge, Bridgwater	1 0 0
R.	Yelfords, Chagford, Devon	1 0 0
y, T.	Heatherton Park, Taunton	1 0 0
, Mrs.	Mitchells, Saffron Walden	1 0 0
, A.	Red House Farm, Stratton-on-the-Fosse, Bath	1 0 0
ens, Darell	Trewornan, Wadebridge, Cornwall	1 0 0
ns, H. C., M.P.	Avenue House, Finchley, N.	1 0 0
ns, Julian	19A, Coleman Street, London, E.C.	1 0 0
s, R. N.	Woodham Hall, Woking, Surrey	1 0 0
s, W.	Budlake, Broad Clyst, Exeter	1 0 0
Henry	Addington House, Addington, Croydon	1 0 0
, C. W. Rees	Town Clerk, Tenby	1 0 0
George.	Camerton, Bath	1 0 0
John S.	Clarence Place Works, Newport, Mon.	0 10 6
ey, E., M.P.	Pensford, Somerset	1 0 0
ways, Hon. H. B. T.	Shapwick, Bridgwater	1 0 0
n, Richard	The Duffryn, Newport, Mon.	1 0 0
n Hills Mineral Water	Church Stretton	1 0 0
pany	23, Warwick Square, London, S.W.	2 0 0
land, A. L.	Kingshill House, Knowle, Bristol	1 0 0
J. S. G. W.		

Name.	Residence.	Sub-
		scriptions.
		£ s. d.
Stubs, Peter	Blaisdon Hall, Newnham, Gloucestershire	1 0 0
Stuckey, Vincent	Hill House, Langport	1 0 0
*Stuckley, Sir G. S., Bart.	Moreton, Bideford	2 0 0
Studdy, T. E.	Estate Office, Basing Park, Alton	1 0 0
Studts, H.	Swansea	1 0 0
Sturge, William	Bristol	1 1 0
*Sutton, M. J.	Kidmore Grange, Caversham, Oxon	2 0 0
*Sutton and Sons	Seedsmen, Reading	2 2 0
Swanwick, R.	College Farm, Cirencester	1 0 0
Swayne, W. T.	Glastonbury	1 0 0
Symes, J. H.	Coat Farm, Martock	1 0 0
Symons, J., and Co. (Limited)	The Plains, Totnes	1 0 0
Talbot, Miss	Margam Park, Port Talbot	1 0 0
Tamlyn, P. Horden	Boode House, Braunton, N. Devon	1 1 0
Tangyes (Limited)	Cornwall Works, Birmingham	1 0 0
Tanner, E. F.	Hawson Court, Buckfastleigh	1 0 0
Tapp, David James	Knaplock, Winsford, Dulverton	1 0 0
Tapp, John	Winsford, Dulverton	0 10 0
Tasker, W., and Sons	Andover	1 1 0
Tate, J. A.	Fairfield, Wells, Somerset	1 0 0
Tayleur, C. W.	Hampton, St. Mary Church, Torquay	1 0 0
†Taylor, George	Crauford, Hounslow, W.	
Taylor, H. W.	Showle Court, Ledbury, Hereford	1 0 0
†Tazewell, W. H.	Manor House, Taunton St. Mary's	
*Temple, Earl	Newton Park, Newton St. Loe	2 2 0
Templeman, G. D.	Haselbury, Crewkerne	1 0 0
Thody, W. T.	386, Clapham Rise, London, S.W.	1 0 0
Thomas, J. C.	The Lodge, Colyford, Axminster	1 0 0
Thompson, G. R., F.C.S.	57, Dock Street, Newport, Mon.	1 0 0
Thomson, Col. White	Broomford Manor, Exbourne, N. Devon	1 0 0
†Thorley, Joseph	Thornhill Bridge, Caledonian Road, King's Cross, London, N.	
Thorley, J.	Ringdale House, Faringdon, Berks	1 1 0
Thorne, C. G.	Curdon Farm, Williton, Somerset	1 0 0
Thorne, J.	West Yard, N. Molton	0 10 0
Thorne, J. G.	Horridge, Romansleigh, S. Molton	0 10 0
Thorne, John	Great Yardley, Withypool	0 10 0
Thresher, John	Corfe Hill, Weymouth	1 0 0
Thring, D. T.	Central Hall, Bedford	1 1 0
Thring, J. Huntley	Alford House, Castle Cary	1 1 0
Throckmorton, Sir N. W., Bart.	Buckland, Faringdon, Berks	1 0 0

Name.	Residence.	Subscriptions.		
		£	s.	d.
G. R.	Stowmarket	1	0	0
Lord A.	48, Berkeley Square, London, W.	2	0	0
Lord H.	Muntham, Worthing	2	0	0
.	The Park Farm, Thornbury	1	0	0
liam	Treworgan, Ross	1	0	0
J. T. S.	Quaish Farm, N. Woolton, Shep- ton Mallet	1	0	0
. C., and Son	Kingswood Road, Mosely, Bir- mingham	1	0	0
A.	Holland Park Dairy, London	1	0	0
W.	Implement Maker, Warminster . . .	1	0	0
l, John	Upper Winchendon, Aylesbury . . .	1	0	0
r, Lord	Tredegar Park, Newport, Mon. . .	2	2	0
Hon. J.	Thorncombe, Crowcombe, Taun- ton	1	0	0
e, James	Tregonning, St. Columb Minor, Cornwall	1	0	0
e, W. H.	Trerice, Newlyn East, Cornwall . . .	1	0	0
e, W. H.	Sherborne, Northleach, Cheltenham .	1	0	0
yne, John	Heligan, St. Austell			
l, E. B. Cely	Port Town, Taunton	1	0	0
, E. R.	The Elms, Frome	1	1	0
Chafyn-Grove, G. . .	North Coker House, Yeovil			
w, E.	Aelybryn, Llanelly	1	0	0
W.	Borough Farm, Broad Clyst, Exeter .	1	0	0
G. H.	21, Broad Street, Bath	1	0	0
H. B.	Bath and Somerset Dairy Com- pany (Limited), Bath	1	0	0
W. D.	Lawrence Road, South Tottenham . .	1	1	0
W. W.	Trivetts Farm, Cossington, Somerset	1	0	0
V.	Leinthall, Ludlow	1	0	0
r, C. C.	Cedars, Wells, Somerset			
A. P.	The Leen, Pembridge, Hereford . . .	1	0	0
Brothers	Milsom Street, Bath	1	0	0
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ohn	291, Edgware Road, London	1	0	0
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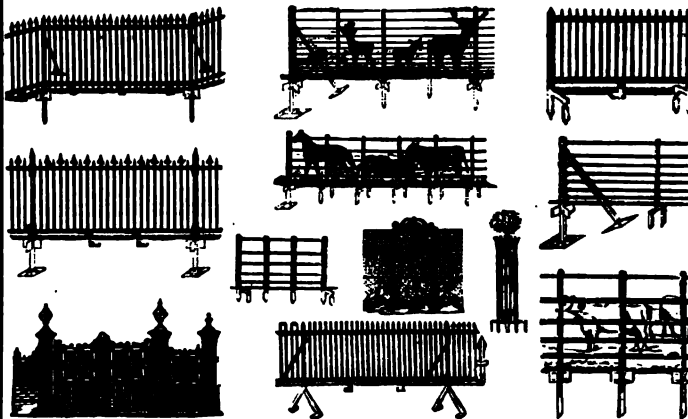
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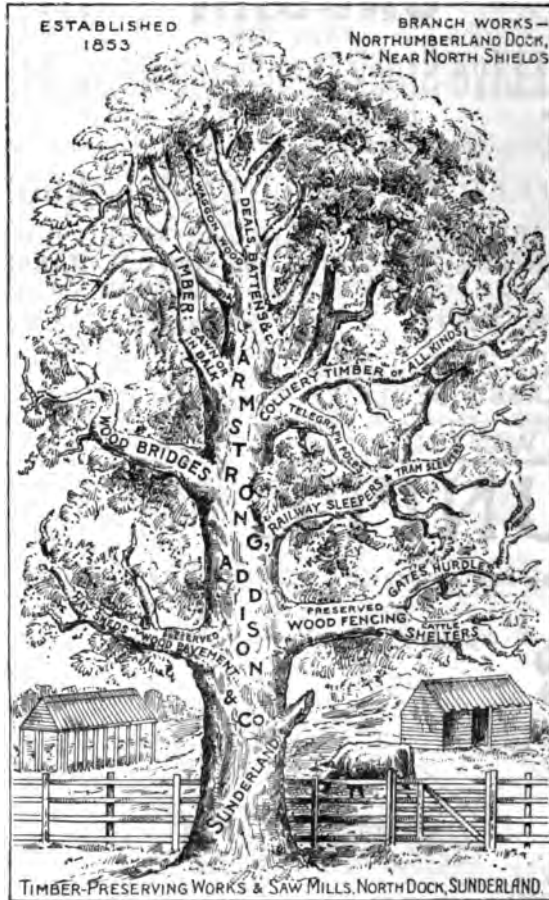
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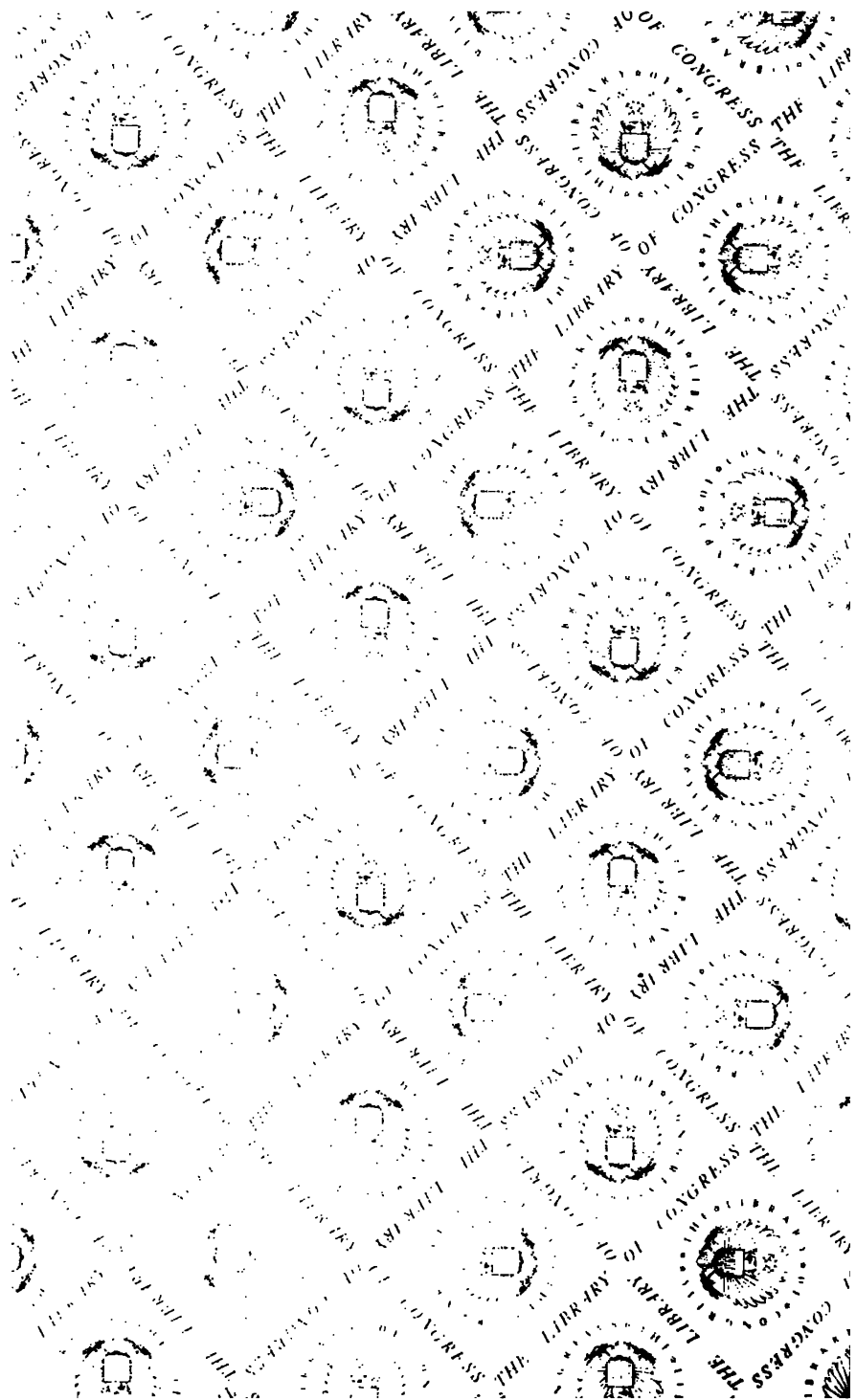
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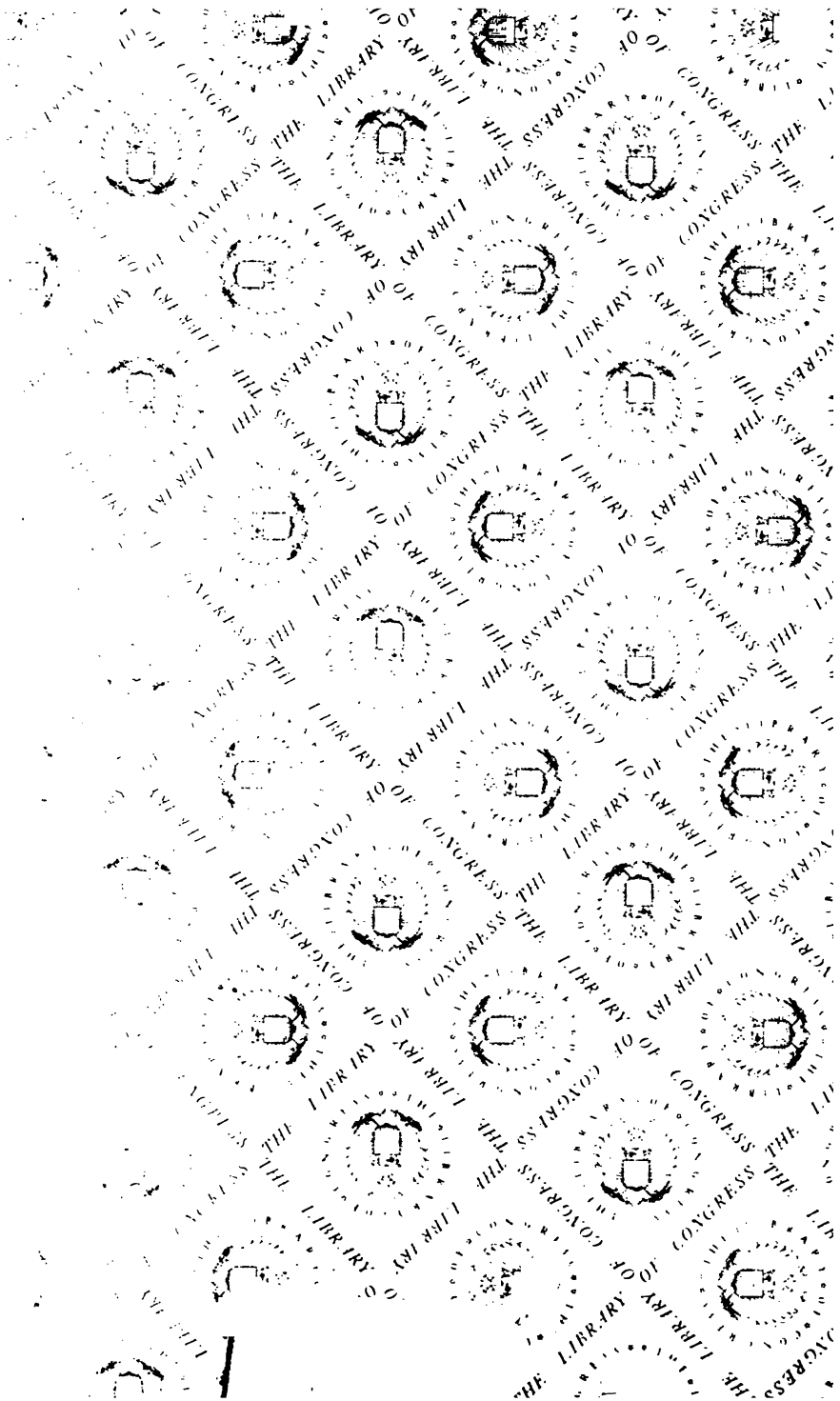
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